



PHASE II ARCHITECTURAL HISTORY SURVEY AND UPDATE FOR THE 3M CAMPUS REDEVELOPMENT PROJECT, SAINT PAUL, MINNESOTA

Submitted to:
Port Authority of the City of St. Paul

Submitted by:
The 106 Group Ltd.

July 2, 2009

**PHASE II ARCHITECTURAL HISTORY SURVEY
AND UPDATE FOR THE
3M CAMPUS REDEVELOPMENT PROJECT,
SAINT PAUL, MINNESOTA**

**SHPO File No. Pending
The 106 Group Project No. 08-26**

**Submitted to:
Port Authority of the City of St. Paul
1900 Landmark Towers
345 St. Peter Street
St. Paul, MN 55102**

**Submitted by:
The 106 Group Ltd.
The Dacotah Building
370 Selby Avenue
St. Paul, MN 55102**

Report Authors:

**Greg Mathis, M.C.R.P.
Miranda Van Vleet, M.H.P.
Saleh Van Erem, M.S.**

July 2, 2009

MANAGEMENT SUMMARY

In January and February of 2009, The 106 Group Ltd. (106 Group) conducted a Phase II architectural history survey of the Minnesota Mining and Manufacturing (3M) Company's Main Plant campus for the 3M Campus Redevelopment Project (project). The proposed project consists of redeveloping and pollution remediation of a number of city blocks that include the historic 3M Main Plant campus on the east side of St. Paul. The survey was conducted under contract with the St. Paul Port Authority (SPPA). As the project is receiving Environmental Protection Agency (EPA) funding, it must comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, which requires Federal agencies to take into account the effects of their undertakings on historic properties. Additionally, the project must comply with applicable state mandates governing cultural resources, such as the Minnesota Field Archaeology Act, Minnesota Historic Sites Act, and Minnesota Private Cemeteries Act. The purpose of the Phase II architectural history survey was to re-evaluate the historic 3M Main Plant campus, which has been previously determined eligible for listing on the National Register of Historic Places (NRHP).

The project area is located in Section 28, T29N, R22W, St. Paul, Ramsey County, Minnesota. The geographical area is roughly bounded on the south by Minnehaha Avenue East; on the southeast by 7th Street East; on the east North Earl Street; on the north by York Avenue, Forest Street North, and Phalen Boulevard; and on the west by Weide Street. The architectural history survey area includes approximately 46.8 acres (18.6 hectares). Greg Mathis, M.C.R.P., served as principal investigator for architectural history.

The Phase II architectural history survey consisted of a review of surveys previously conducted for the 3M Main Plant campus. The previous surveys determined that the campus was eligible for listing on the NRHP as a historic district. The surveys recommended a period of significance for the historic district and also determined which buildings were considered contributing and non-contributing to the district. It was necessary to re-evaluate the 3M Main Plant Historic District (RA-SPC-0449) for the current proposed project in view of the fact that the most recent survey was completed more than 10 years ago in 1997, many buildings have either been demolished or altered since that time, and additional buildings have reached 50 years of age, which is the minimum age that is typically required for a property to be considered eligible for listing on the NRHP. In addition, the previous studies did not evaluate all of the buildings on the 3M campus. Those which were either constructed after the recommended period of significance or were not originally constructed by 3M were not included in the evaluation.

As a result of the current Phase II architectural history survey, the 106 Group recommends that the 3M Main Plant Historic District is still eligible for listing on the NRHP. The 106 Group recommends a revised period of significance for the 3M Main

Plant Historic District of 1910-1958. The 106 Group also recommends a boundary increase to correspond for the development of the campus up through 1958. Of the 26 extant buildings, two structures (the water tower and pump house, and the CStPM&O railway), and one site (former site of Building 47) on the 3M Main Plant campus, 24 buildings, two structures, and one site are recommended as contributing to the historic district and two buildings are recommended as non-contributing. Although the individual significance of the buildings was not included as part of this evaluation, several buildings (Buildings 1, 21, 24, 80, 81, and 83), in addition to being contributing resources to the 3M Main Plant Historic District, may also be individually eligible for listing on the NRHP and may need further evaluation.

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1.0 INTRODUCTION

In January and February of 2009, The 106 Group Ltd. (106 Group) conducted a Phase II architectural history survey of the Minnesota Mining and Manufacturing Company's (3M) Main Plant campus for the 3M Campus Redevelopment Project (project). The proposed project consists of pollution remediation and the redevelopment of an area that includes the historic 3M Main Plant campus on the east side of St. Paul. The survey was conducted under contract with the St. Paul Port Authority (SPPA). As the project is receiving Environmental Protection Agency (EPA) funding, it must comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, which requires Federal agencies to take into account the effects of their undertakings on historic properties. Additionally, the project must comply with applicable state mandates governing cultural resources, such as the Minnesota Field Archaeology Act, Minnesota Historic Sites Act, and Minnesota Private Cemeteries Act. The purpose of the Phase II architectural history survey was to re-evaluate the 3M Main Plant campus, which has been previously determined eligible for listing in the National Register of Historic Places (NRHP), to determine if it retained its eligibility for listing on the NRHP.

The project area is located in Section 28, T29N, R22W, St. Paul, Ramsey County, Minnesota. The geographical area is roughly bounded on the south by Minnehaha Avenue East; on the southeast by 7th Street East; on the east North Earl Street; on the north by York Avenue, Forest Street North, and Phalen Boulevard; and on the west by Weide Street (Figures 1-2). The architectural history survey area includes approximately 46.8 acres (18.6 hectares). Greg Mathis, M.C.R.P., served as principal investigator for architectural history.

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As a result of the current Phase II architectural history survey, the 106 Group recommends that the 3M Main Plant Historic District is still eligible for listing on the

NRHP. The 106 Group recommends a revised period of significance for the 3M Main Plant Historic District of 1910-1958. The 106 Group also recommends a boundary increase to correspond for the development of the campus up through 1958. Of the 26 extant buildings, two structures (the water tower and pump house, and the CStPM&O railway), and one site (former site of Building 47) on the 3M Main Plant campus, 24 buildings, two structures, and one site are recommended as contributing to the historic district and two buildings are recommended as non-contributing. Although the individual significance of the buildings was not included as part of this evaluation, several buildings (Buildings 1, 21, 24, 80, 81, and 83), in addition to being contributing resources to the 3M Main Plant Historic District, may also be individually eligible for listing on the NRHP and may need further evaluation.

1.1 REPORT STRUCTURE

The following report explains the project methodology, previous investigations, survey results, and recommendations for additional survey work. The re-evaluation of the 3M Main Plant Historic District includes recommendations on the eligibility of the district, the current status of contributing and non-contributing properties within the historic district, and recommendations for additional survey or mapping work. The report includes graphics illustrating the location of the 3M Main Plant Historic District as well as the recommended boundaries for the district.

2.0 METHODS

2.1 OBJECTIVES

The primary objectives of the architectural investigation were to update existing survey information on the buildings and structures located on the 3M Main Plant campus, including information on historical integrity, alterations, and demolition, and to re-examine the recommended period of significance and boundaries for the 3M Main Plant Historic District. In addition, the buildings on the 3M campus were examined to determine those that are considered contributing and those that are non-contributing to the historic district. Buildings were not evaluated for individual significance during this investigation. All work was conducted in accordance with *The Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* [48 Federal Register 44716-44740] (National Park Service [NPS] 1983).

2.2 BACKGROUND RESEARCH

Prior to the start of the field survey in January 2009, staff from the 106 Group reviewed the cultural resources survey reports (106 Group Ltd. 1994a, 1994b), the Phase I survey report (Dolence et al. 1996), and the Phase II survey report (Ketz and Schmidt 1997). On January 21, 2008, historical aerial photos were obtained from the University of Minnesota Borchert Map Library and Sanborn Fire Insurance Maps were obtained electronically from the Minneapolis Public Library. On February 5, 2009, staff from the 106 Group reviewed the 3M Corporation files at the Minnesota Historical Society. The following day, on February 6, 2009, the 106 Group reviewed permit indexes for the blocks encompassed by the 3M campus at the Ramsey County Historical Society. On February 16, 2009, the 106 Group obtained various research materials from the historical archivist at the 3M Corporation.

2.3 FIELD METHODS

The 106 Group conducted an exterior survey of all extant buildings within the 3M campus. In addition, an interior survey was conducted on all buildings except Buildings 27, 28, 30, 41, 84, 85, and the water tower and pump house because access was not available at the time of survey. Notations were made regarding the current condition, major alterations, and the main architectural features or characteristics of each building or structure. The exterior of each building was thoroughly documented with digital photographs. The interior of each building was documented with field notes.

2.4 INVENTORY FORMS

An updated Minnesota Architecture-History Inventory Form was prepared for the 3M Main Plant Historic District, including information on each contributing and non-contributing building to the 3M Main Plant Historic District (Appendix A).

2.5 EVALUATION

Upon completion of the fieldwork, the potential eligibility of each resource for listing on the NRHP was assessed based on the property's potential significance and integrity. The NRHP criteria, summarized below, were used to help assess the significance of each property:

- Criterion A – association with the events that have made a significant contribution to the broad patterns of our history;
- Criterion B – association with the lives of persons significant in our past;
- Criterion C – embodiment of the distinctive characteristics of a type, period, or method of construction; representation of the work of a master; possession of high artistic values; or representation of a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D – potential to yield information important to prehistory or history (NPS 1995).

The NPS has identified seven aspects of integrity to be considered when evaluating the ability of a property to convey its significance: location, design, setting, materials, workmanship, feeling, and association. The integrity of each property or site was assessed in regard to these seven aspects. The properties were also assessed to determine if they represent a type of resource to be evaluated for NRHP eligibility using the Criteria Considerations (NPS 1995).

3.0 LITERATURE SEARCH

3.1 PREVIOUS ARCHITECTURAL HISTORY STUDIES

As previously noted, the 3M campus has been studied in four previous investigations including: *Burlington Northern Regional Trail, East Seventh Street to Lake Phalen, Cultural Resources Survey, Saint Paul, Minnesota* (106 Group Ltd. 1994a, 1994b); *Burlington Northern Regional Trail, East Seventh Street to Lake Phalen, Cultural Resources Survey, Saint Paul, Minnesota: Minnesota Mining and Manufacturing (3M) Historic Structures Survey* (106 Group Ltd. 1994b); *Phalen Boulevard Phase I Cultural Resources Investigation for the Draft Environmental Impact Statement, City of St. Paul* (Dolence et al. 1996); and *Phalen Boulevard Phase II Cultural Resources Evaluations for the Draft Environmental Impact Statement, St. Paul, Minnesota* (Ketz and Schmidt 1997).

In 1994, the 106 Group conducted two cultural resources surveys for the Burlington Northern Trail project: *Burlington Northern Regional Trail, East Seventh Street to Lake Phalen, Cultural Resources Survey, Saint Paul, Minnesota* (106 Group Ltd. 1994a), and *Burlington Northern Regional Trail, East Seventh Street to Lake Phalen, Cultural Resources Survey, Saint Paul, Minnesota: Minnesota Mining and Manufacturing (3M) Historic Structures Survey* (106 Group Ltd. 1994b). The area of potential effect (APE) for the above reports was determined in consultation with the SHPO and included only the 3M buildings that straddled the Burlington Northern Regional Trail corridor. Fourteen of the 35 buildings which were present on the 3M campus at that time were included in the investigation. Of those 14, only four were constructed within the suggested period of significance of 1914-1948 and, therefore, only those four were evaluated. The 3M campus (RA-SPC-0449) was recommended as eligible for listing on the NRHP as a historic district. The rationale for the period of significance was based on the company's early emphasis on research and development, quality control, responsiveness to the needs of the manufacturing industry, and innovative selling and management techniques during the period from 1914 to 1948 that resulted in the development of several successful products on a national and international scale. In addition, it was influenced by the 50-year cut-off date for historic significance typically applied for eligibility for listing in the National Register of Historic Places. Because the investigation only focused on a portion of the campus, recommended boundaries of the historic district were not included in the report.

The *Phalen Boulevard Phase II Cultural Resources Evaluations for the Draft Environmental Impact Statement, St. Paul, Minnesota* (Ketz and Schmidt 1997) report recommended a revised period of significance of 1910-1948, beginning in 1910 rather than 1914 to correspond with the commencement of operations with the construction of Building 1. At that time, the entire campus was re-evaluated with the exception of: the buildings north of the railroad tracks and east of Forest Avenue, which had been extensively altered and included new construction; Building 47, which did not meet the

minimum 50 year requirement for evaluation; and the buildings south of Reaney Avenue, which were not original to 3M. The recommended boundaries were: Forest Avenue on the east, Arcade Street on the west, and the railroad tracks on the north. On the south, the recommended boundary ran southwest along East Seventh Street from the intersection with Forest Avenue to Reaney Avenue, then west on Reaney Avenue to Mendota Street, then south on Mendota Street for one-half block, then west on the alley to Arcade Street. Twelve buildings were recommended as contributing resources to the historic district. Of the remaining buildings located within the recommended boundaries, four (Buildings 7, 24, 42, and 51) were constructed after the period of significance and were recommended as non-contributing. The determination of the period of significance for this study was influenced by the 50-year cut-off date for historic significance typically applied for eligibility for listing in the National Register of Historic Places.

TABLE 1. PREVIOUSLY DOCUMENTED BUILDINGS ON 3M MAIN PLANT CAMPUS

Building No.	SHPO Inventory No.	Address or Location	NRHP Status	Description
N/A	RA-SPC-0449	3M Main Plant Historic District	Determined Eligible	Extant
1	RA-SPC-0450	West of Forest St. N., south of Phalen Blvd.	Contributing	Extant
2	N/A	NW corner of Forest St. N. & Bush/Fauquier Ave.	Contributing	Extant
3	RA-SPC-0451	West of Forest St. N., south of Phalen Blvd.	Contributing	Extant
7	RA-SPC-0452	West of Forest St. N., south of Phalen Blvd.	Non-contributing	Non-extant
8	N/A	West of Forest St. N., south of Phalen Blvd.	Contributing	Non-extant
11	N/A	East of Mendota St., south of Phalen Blvd.	Contributing	Non-extant
12	N/A	East of Mendota St., south of Phalen Blvd.	Contributing	Non-extant
18	RA-SPC-0453	West of Forest St. N., south of Phalen Blvd.	Contributing	Non-extant
20	N/A	NE corner of Bush/Fauquier Ave. & Mendota St.	Contributing	Extant
21	RA-SPC-0455	900 Bush/Fauquier Ave.	Contributing	Extant
22	N/A	SW corner of Mendota St. & Bush/Fauquier Ave.	Contributing	Non-extant
23	N/A	SW corner of Mendota St. & Bush/Fauquier Ave.	Contributing	Non-extant
24	RA-SPC-0454	751 Mendota St.	Non-contributing	Extant
26	N/A	NW corner of Mendota St. & Bush/Fauquier Ave.	Contributing	Non-extant
42	N/A	East of Mendota St., north of Reaney Ave.	Non-contributing	Extant
51	N/A	East of Arcade St., south of railroad tracks	Non-contributing	Non-extant
96	N/A	878 Duchess St.	Not included	Extant
99	N/A	878 Duchess St.	Not included	Extant

4.0 HISTORICAL CONTEXTS

4.1 CULTURAL HISTORY OVERVIEW

As part of the Federal legislative framework governing the treatment of cultural resources, the SHPO has developed a series of historical and thematic contexts in which cultural properties may be interpreted and evaluated (Dobbs 1989a, 1989b; SHPO 1993). Minnesota's developmental sequence is divided into three broad contexts: precontact (ca. 12,000 years before present [B.P.] to A.D. 1700), contact (ca. A.D. 1630 to 1820) and post-contact (ca. 1830 to the present). The precontact contexts emphasize patterns of regional adaptation or technological and cultural traditions, whereas the contact and post-contact contexts are generally organized by themes addressing different interactions and industries. Since this report addresses only architectural properties, only the post-contact contexts are presented.

4.1.1 *Urban Centers (1870-1940)*

An urban center is a hub for economic and political activity and acts as a magnet for surrounding areas. They interact with other urban centers both statewide and regionally, and at a local level with the areas surrounding them. They are characterized by commerce, industry, and “dynamic movements between residence and workplace, work and leisure” (SHPO 1990). The development of urban centers in Minnesota falls into roughly two periods: early cities which developed as a result of resource-extractive industries and those that resulted from the development of non-extractive businesses around the turn of the twentieth century (SHPO 1990). In addition, there are two tiers of urban centers in Minnesota. Minneapolis, St. Paul, and Duluth are considered within the first tier and exist not only in a regional but national context of commerce, government, shipping, and transportation (SHPO 1990). The second tier is comprised of smaller cities such as Rochester and Mankato which shall be considered intra-state centers.

With the decline of resource extractive businesses such as lumber and flour milling in the Twin Cities came industrial development lead by companies such as Honeywell and 3M, which were not dependent on raw materials from rural areas (SHPO 1990). Companies such as these played a vital role in the twentieth century development in urban centers and the properties associated with them (offices, factories, laboratories, etc.) are considered “manifestations of the process of development known as urbanization” (SHPO 1990). The predominant types of properties which shall be considered within the statewide *Urban Centers (1870-1940)* context are those associated with commerce, industry, and transportation (SHPO 1990).

4.1.2 *City of St. Paul*

What is now known as the City of St. Paul was first settled by Pierre Parrant in 1838 (Upham 1920). However, the first *permanent* settlement in the City of St. Paul occurred

in 1847 when James M. Marsh divided the area east of the Mississippi River into six-by-six-mile townships (City of St. Paul 2009a). These townships were further divided into one-mile sections in late-1847 however, the area west of the Mississippi was not divided into sections until 1853 (City of St. Paul 2009a). The city, conveniently located on the Mississippi River, immediately became a steamboat port and was established as the “Town of St. Paul” by an act of legislature of the Territory of Minnesota in November of 1849; it comprised approximately 280 acres. The first neighborhoods were platted near the Upper and Lower levees by Ira and Benjamin Brunson in 1849 (City of St. Paul 2009a). It was in this same year that St. Paul was confirmed as capitol of the territory (Zellie and Peterson 2001a). The population of the town at this time was approximately 900 residents (City of St. Paul 2009b).

The town continued to grow and develop and by the mid-1850s was a thriving fur trade center and prime port. In 1854, the town was incorporated as a city with a total area of 2,560 acres (Upham 1920). By 1855, the population had grown to 4,716 residents and by 1860 it was more than 10,000 strong (Zellie and Peterson 2001c, City of St. Paul 2009b). The city officially became the Minnesota state capitol when statehood was achieved in 1858. The first bridge across the Mississippi River was completed at Wabasha Street in 1859 and the first railroad arrived in St. Paul in 1862 with the completion of a line by the St. Paul & Pacific Railroad, later Great Northern, from St. Paul to St. Anthony. With continued growth and development, the railroads eventually replaced the steamboats in the 1870s. Throughout the remainder of the nineteenth century, several tracts of land were annexed to the city, changing the boundaries more than 14 times from 1849 to 1887 (City of St. Paul 2009a).

Commerce in St. Paul began with the fur trade and immediately included general merchandisers and specialized retailers. In 1849, there were 16 mercantile firms listed in the town (Zellie and Peterson 2001c). About 20 years later, city directories listed a number of bakers and confectioners, meat markets, dry goods dealers, cigar dealers, grocers, and druggists in addition to the mercantile firms (Zellie and Peterson 2001c). These retailers were spread around the city, which at that time, was still quite walkable. The St. Paul Street & Railway Company, founded in 1872, built a two-mile track from Lowertown to Lafayette and Westminster Streets (Zellie and Peterson 2001b). Tracks continued to be built throughout the city, bringing residential development with them. The horse car system was electrified in 1893, further expanding residential and commercial development by allowing an inexpensive, comfortable, and efficient commuting system (Zellie and Peterson 2001b). Commercial nodes consisted of small corner store developments as well as multi-block districts along the streetcar lines; Payne, Rice, and Arcade Avenues are east side representatives of this type (Zellie and Peterson 2001c).

Annexations and continued streetcar development led to dense settlement in all directions of St. Paul by about 1930. Beginning around this same time, these streetcar commercial centers were becoming more automobile-oriented. In the following decades, older commercial buildings were razed and replaced with shopping center developments. The

neighborhoods on the periphery of the city became automobile dependent suburbs. In addition, the construction of the Twin Cities freeways in the 1950s and 1960s allowed many of those living in the city to move to the suburbs. Accordingly, St. Paul, like many major cities at that time, faced a decline in the population. The population of the city was, however, again on the rise during the last decades of the twentieth century and today the City of St. Paul has a population of more than 287,000 residents (City of St. Paul 2009c).

4.1.3 St. Paul, Stillwater & Taylor's Falls / Chicago, St. Paul, Minneapolis & Omaha / Chicago & North Western / Union Pacific Railroad

The St. Paul, Stillwater & Taylor's Falls Railroad (StPS&TF) was incorporated on December 4, 1869 with the objective "to build and operate a railroad from St. Paul to Taylor's Falls via Stillwater, with a branch line to Hudson" (Prosser 1966:163). The railroad route was defined in the articles of incorporation and stated that the line would travel between St. Paul and Taylor's Falls by way of Stillwater, passing through the town of Marine on St. Croix, with a branch road to Hudson, Wisconsin (Folsom 1888:671). In 1872, the StPS&TF constructed the line that runs from St. Paul to the Stillwater Junction, located southwest of the City of Stillwater. Later in 1872 the line was extended from the Stillwater Junction southeast to the St. Croix River and in 1873, the line was extended from the Stillwater Junction northeast into the City of Stillwater. The segment of the railroad from Stillwater Junction to the City of Stillwater was taken up in 1935 (Prosser 1966:163).

On May 25, 1880, the StPS&TF, West Wisconsin Railway Company, and North Wisconsin Railway Company were incorporated together as the Chicago, St. Paul, Minneapolis & Omaha Railway Company (CStPM&O); Prosser 1966:126). The CStPM&O, also known as the "Omaha Road," was a large regional railroad with lines extending across the upper Midwest during the late nineteenth and early twentieth centuries. By 1882, the CStPM&O had over 1,147 miles of trackage in Minnesota, Wisconsin, Iowa, and Nebraska (Casey and Douglas 1948:153).

In 1904, the Chicago & North Western Railway Company (C&NW) acquired stock ownership of the CStPM&O (Prosser 1966:121). Even though the two companies functioned operationally as one company, the CStPM&O remained legally separate, and had its own board of directors and headquarters in St. Paul.

In 1957, the C&NW tightened its control of the CStPM&O through a lease of all of the CStPM&O's trackage. In 1972, the two companies officially merged to become the C&NW (Murray 2008:35). In 1995, the C&NW was purchased by the Union Pacific Railroad Company (UP) who operates the railroad line today (Chicago and North Western Historical Society 2004). This railroad line bisects the project area.

4.1.4 Development of the East Side of St. Paul

The east side of St. Paul is located east of the downtown and north of the Mississippi River. The neighborhoods that comprise the east side - Payne-Phalen, Dayton's Bluff, the Greater East Side, and Battle Creek-Highwood, were established along the CStPM&O tracks. The Payne-Phalen neighborhood was developed generally north of the CStPM&O railroad tracks just outside of downtown while the Dayton's Bluff neighborhood was developed south of the railroad tracks just outside of downtown. Both of these primarily residential neighborhoods were developed in the late nineteenth century.

Land use development in St. Paul had a strong relationship to the locations of railroads. Many industries developed along the railroads creating industrial parks in the North End, Greater East Side, and Midway areas of St. Paul. According to 1923 aerial photographs, the blocks directly adjacent to the CStPM&O tracks on the east side contained generally industrial and commercial structures while the surrounding blocks contained residential structures (Writh et al. 1923). This corridor is associated with the growth of several nationally significant manufacturing companies. The railroad yard at Arcade Street on the east side was the reason the C.N. Nelson Lumber Company was established at Wells and Arcade Streets in the 1880s. This company was succeeded by the Conrad Bohn Sash and Door Manufacturing Company which was located on the east side of St. Paul from 1888 until 1904. In 1910, the Bohn facility was purchased by the Seeger Refrigeration Company, the forerunner of the Whirlpool Corporation (Zellie and Peterson 2001:8b). In 1910, 3M built its first St. Paul plant on the east side in order to be near these transportation facilities. The 3M Main Plant campus would continue to expand in this area throughout the twentieth century.

4.1.5 3M Corporate History

The Founding of 3M

At the turn of the twentieth century, corundum was discovered in Ontario, Canada. This diamond-hard mineral was quickly purchased by Eastern manufacturers for use in grinding wheels, whetstones, and sandpaper. In 1901, Duluth prospector Ed Lewis made a discovery of what was believed to be corundum in Minnesota near the Baptism River on the North Shore of Lake Superior. Many companies rushed to the area to begin mining because of the prospect of selling the material to Eastern manufacturers (Thureen 1992:39).

One such company was 3M. 3M was founded in 1902 in Two Harbors, Minnesota by five businessmen; Henry S. Bryan, superintendent of the Duluth & Iron Range Railroad; Herman W. Cable, the proprietor of a Two Harbors meat market; John Dwan, an attorney; William A. McGonagle, executive of the Duluth, Missabe & Northern Railroad; and Dr. J. Danley Budd. Their goal was to mine the diamond-hard corundum from the North Shore and sell it in bulk to grinding wheel manufacturers, just as the Minnesota Abrasive Company had been doing (Thureen 1992:40; Huck 1955:6-10).

Before investigating the amount of and type of mineral discovery on the North Shore 3M was incorporated as a company, company shares were sold, mining plans were laid, and the company purchased a controlling interest in the Minnesota Abrasive Company. Soon company salesmen were marketing corundum to grinding wheel manufacturers in Chicago and Detroit; however no orders were immediately placed for their materials (Huck 1955:9-11).

As there appeared to be no interest from grinding wheel manufacturers in purchasing the bulk material, 3M decided to manufacture their own products. 3M constructed a mineral crushing and screening plant near Crystal Bay circa 1903. The wood-frame plant was 50 feet by 60 feet and 64 feet in height (Thureen 1992:42). The first 3M sandpaper was produced in 1904. The company; however, continued to face financial difficulties and St. Paul businessmen Edgar B. Ober and Lucius P. Ordway gained controlling interest in the company in 1905. Company offices were moved to Duluth and soon large quantities of corundum sandpaper were being produced (106 Group Ltd. 1994b:5). The company stamp on this early sandpaper included the iconic “3M Co.” logo (3M 2002:126). Unfortunately, the company’s mineral deposit of corundum proved to be an inferior abrasive material (106 Group Ltd. 1994b:5). In 1907, important figures in the future of 3M, William L. McKnight and Archibald G. Bush, were hired as the first bookkeepers in the Duluth office (Milburn 2006:31-32).

The Move to St. Paul

Due to the location of the sandpaper plant near the port of Duluth, humidity became a menace to the manufacturing process. Investors Ober and Ordway decided to relocate the plant to St. Paul so they could have better oversight of the company (Milburn 2006:31-32). In 1909, Lucius P. Ordway paid to move the headquarters of the company to St. Paul even though the company was already in debt to him for over \$225,000. In 1910, construction began on a new three-story plant in the Dayton’s Bluff neighborhood, approximately 1½ miles from downtown St. Paul (106 Group Ltd. 1994b:8, Huck 1955:58). The original plant, now known as Building 1, cost \$35,302 and was located on Forest Street North near Fauquier Street (now Bush Avenue) in the midst of an industrial area located on the south side of the CStPM&O tracks. Due to the location of the plant between other industrial developments and surrounded by residential development on the south, this location proved to be problematic because the purchase and demolition of surrounding buildings became a necessity whenever 3M needed to expand its facilities (Huck 1955:58).

Early Innovation, Success, and Growth

3M gradually expanded as McKnight, now the sales manager, met with clients to discuss their sandpaper products. This one-on-one contact with clients was an innovation in marketing. By 1914, due to enough client feedback, the company had realized the inferiority of corundum and began importing graphite from Spain (Milburn 2006:32). Complaints, however, continued to flood in regarding their sandpaper products in. It was later discovered that a shipment of Spanish graphite had been contaminated by olive oil,

which caused the graphite to eventually lose its bond with the adhesive products. In 1916, in response to the bad client feedback after the olive oil contamination problem, the company established its first testing laboratory in Building 1 (3M 2002:126). Building 1 was also where the company developed an abrasive cloth product that used artificial mineral aluminum oxide. The product, “THREE-M-ITE”, became wildly popular and allowed 3M to propel their products into the national market (Huck 1955:75).

Between 1914 and 1919, the consumption of abrasive products in the United States (U.S.) increased 49 percent (Huck 1955:91). The company slowly grew during the years leading up to American involvement in World War I and in 1916 the company was ready to expand. Edgar B. Ober, then the president of 3M, recommended to general manager McKnight that instead of increasing the size of the St. Paul Main Plant campus that 3M should relocate to a city closer to raw materials and customers. McKnight said “the job of moving the entire plant to another city looked just too big to me. So we expanded in St. Paul and continued to be hampered by high freight costs (Huck 1955:90).” Due to a lack of building materials during the war a partial fourth story, measuring 85 by 30 feet, was added to Building 1 instead of constructing a new building (Huck 1955:90).

After World War I, the American manufacturing economy continued to grow. In 1920, McKnight received a letter from Francis G. Okie, a Philadelphia printing ink manufacturer, requesting samples of the mineral grit 3M used in manufacturing sandpaper. Okie had invented a waterproof sandpaper and wanted to experiment with different sandpaper grits. On February 3, 1921, 3M purchased Okie’s patent for waterproof sandpaper (Huck 1955:92-94). Okie came to work for 3M and by the early 1920s, 3M and Okie had developed a waterproof sandpaper known as “WETORDRY” which quadrupled 3M’s earnings and enabled the company to push its products into the international market (106 Group Ltd. 1994b:9). The testing, development, and production of waterproof sandpaper prompted the 3M Main Plant campus to expand in the 1920s.

Diversification and Growth

The expansion of the company due to “WETORDRY” allowed McKnight to venture into diversifying 3M’s product line in the 1920s. In the early 1920s, Okie developed “LACQUA POLISH”, “LUSTRA WAX” (later known as “RETSUL”), and “3M SANDING LIQUID” for the expanding automotive industry (Huck 1955:127).

In 1925, Richard G. Drew, a 3M laboratory employee, began testing tape products while trying to find a new kind of industrial masking tape for the automotive industry. His new masking tape, which left no residue, was christened “SCOTCH” Brand masking tape. Yearly volume for the product grew steadily with \$164,279 in sales during its first year and \$1,151,023 by 1935 (Huck 1955:138). After his masking tape success, Drew began testing cellophane and adhesives and invented “SCOTCH” Brand cellulose tape in 1930 (Huck 1955:130). Later named cellophane tape, the product was a huge success even though it was introduced to the American public during the first year of the Great Depression (Huck 1955:144).

Golden Era of Research

On August 12, 1929, Edgar B. Ober retired as the 3M president, and William McKnight became president (Comfort 1962:119). McKnight made it a priority to diversify the company through new product development. This effort is reflected in a quote by Mr. McKnight in which he said that, “the 1930-1940 period became known as our golden era of research” (Huck 1955:180).

The company first ventured into roofing granules. In 1929, 3M purchased its only Midwest competitor, Wausau Abrasives Company in Wausau, Wisconsin, which came with a large deposit of quartz. 3M developed colored roofing granules in the early 1930s. The testing laboratory began experimenting on colorized quartz roof granules and in 1931 3M introduced “COLORQUARTZ” to the market (Huck 1955:150-151).

Besides good sales of “SCOTCH” Brand tapes and “COLORQUARTZ,” 3M was able to survive the Great Depression and remain profitable because of their acquisition of a competitive abrasive firm, the Baeder-Adamson Company from Philadelphia (Huck 1955:179). In 1930, McKnight purchased the Baeder-Adamson plant, closed it, and moved its employees and machinery to St. Paul, which increased the value of 3M and allowed the company to continue product development appropriations (Huck 1955:180).

In 1935, 3M developed an under seal coating for automobiles. By 1936, an Adhesives Division was established and an adhesives plant and laboratory were opened in Detroit to be near the automobile industry (3M 2002:128).

In 1937, 3M launched an expanded research program with long-range plans of investing millions of dollars into product development and engineering research. This program began with developing a Central Research Laboratory, New Products Department, Products Fabrication Laboratory, and expanding the Engineering Department (Huck 1955:199-200).

The first product to come out of the expanded research program was “SCOTCHLITE” Brand reflective sheeting in 1937. In 1937, “SCOTCHLITE” Brand reflective sheeting was tested for durability by being laid on Victoria Street in St. Paul near the intersection of Marshall Avenue. In 1938, it was tested along Arcade Street (Highway 61) just north of the Main Plant campus (Huck 1955:219). The glass-bead product slowly entered the reflective sheeting market as additional testing continued and it finally became a profitable 3M product by 1947 (Huck 1955:221).

As the demand for “SCOTCH” Brand products increased in the 1930s, 3M needed to expand its facilities, however the company decided to work with the space it had due to an unfavorable tax situation in Minnesota in the mid-1930s (Huck 1955:148). In 1935, the Farmer-Labor administration under Governor Floyd Olson proposed enforcement of a corporate-excess tax law which was on the statute books from 1878 (Huck 1955:167).

After a 1937 lawsuit in which the Minnesota State Supreme Court repealed the corporate-excess tax law, combined with the fact that the nation was finally starting to come out of the depression, 3M was ready to expand their Main Plant campus in the late 1930s. In September of 1937, McKnight announced a half-million-dollar expansion program (Huck 1955:169-170). This expansion corresponded with another plan announced by McKnight that same year to develop a Central Research Laboratory, New Products Department, Products Fabrication Laboratory, and expand the Engineering Department. As part of this expansion effort, construction on Building 20 started in 1937 and was completed in 1938, the Central Research Laboratory opened in 1937, a new corporate headquarters (Building 21) was completed in 1939, and the New Products Department was created in 1940, and an addition to Building 20 was started in 1940 and completed in 1941.

World War II and Post War Growth

The entry of the U.S. into World War II challenged the Central Research Laboratory to develop productive war materials with minimal raw materials. One of these products was “SAFETY-WALK” Brand non-slip sheeting. This granule coated material allowed for safe walking on ship decks and airplane wings, and on other surfaces where water and oil could make it dangerous (Huck 1955:227-228). “SCOTCHLITE” Brand reflective sheeting also became heavily used during the war.

As the U.S. war effort continued, 3M increased production and the 3M work force nationwide increased from 3,300 in 1941 to almost 5,300 in 1943 (3M 1943, 3M 2002:18). As part of this expansion, the Products Fabrication Laboratory was opened in 1943 and the Engineering Department finally expanded in 1944 from approximately 200 employees up to 1,000 employees (Huck 1955:200).

The work force continued to expand after World War II and by 1948 the company needed to restructure its corporate management due to its increasingly diversified product line. In 1948, the company was divided into eight divisions: Coated Abrasives, Roofing Granules, Adhesives and Coatings, Central Manufacturing, Color and Chemical Division, Electrical Insulation and Sound-Recording Tape, Pressure-Sensitive Tapes, and Reflective Sheeting (Huck 1955:238).

National Growth

In 1947, as 3M sales increased new manufacturing plants were opened around the U.S. A tape factory was opened in Hutchinson, Minnesota, an adhesives plant was opened in Los Angeles, California, and a roofing granules plant was opened in Little Rock, Arkansas (3M 2002:129). The Main Plant campus also continued to expand and by 1949 3M employed 4,300 people at their St. Paul facilities (3M October 1949:12).

In 1950, 3M developed what was hailed as the “strongest tape ever.” “SCOTCH” Brand filament tape No. 890 was designed for heavy packaging and, with imbedded glass filaments in the tape, it had a tensile strength of ¼ ton per inch of width (3M 1950). In 1951, 3M developed the “THERMO-FAX” copying process, the predecessor of modern day copy machines.

In the 1940s, the Central Research Laboratory had begun experimenting with magnetic sound-recording tape and in 1951, 3M developed “SCOTCH” Brand magnetic sound-recording tape (Huck 1955:203). 3M considers Bing Crosby instrumental in promoting the new product as he first used it to record his hourly dinner show for the American Broadcasting Company (Huck 1955:208-209). Between 1953 and 1954, the Magnetic Tape Division produced three types of sound recording products, high output tape, extra play tape, and a striped 33-mm tape (Comfort 1962:184).

By 1953, “SCOTCHLITE” Brand reflective sheeting was grossing around \$10 million annually (Huck 1955:221). This was in part due to 3M’s patent of red reflective sheeting that was visible at night. The successful use of this product led to the U.S. Joint Committee on Uniform Traffic Control Devices decision to propose red STOP signs as the national standard in June of 1953 (Huck 1955:226).

An International Company

In 1949, McKnight became the chairman of the board and Richard P. Carlton became president of the company. Carlton had worked for 3M since 1921 when he was hired as a laboratory assistant (3M 2002:129). Although the company was growing at an almost exponential rate in the U.S., Carlton set his sights on a much broader market. In 1951, 3M established an International Division. International facilities were opened in Australia, Brazil, Canada, France, Germany, Mexico, and the United Kingdom. In 1959, 3M’s sales exceeded \$500 million, including international sales (3M 2002:130).

In 1953, Herb Buetow succeeded Carlton as the president of 3M and the company developed plans for a large expansion plan that would revolve around a new facility to be built in Maplewood, Minnesota, called 3M Center. The company broke ground in Maplewood in 1953 and the first building was complete there in 1955. This marks the beginning of the shift of the company’s headquarters from East Site of St. Paul to a new campus further east. The corporate headquarters of 3M were relocated from the Main Plant in St. Paul to 3M Center when its first administration building was completed in 1962 (3M 2002:130-131).

Over time, 3M has continued to grow and prosper, by developing innovative new products that meet the needs of a large cross section of society not only in the U.S., but around the world. In 1965, 3M sales reached \$1 billion, by 1979 it had reached \$5 billion, and by 1988 \$10 billion (3M 2002:130-133). Today, 3M remains a billion dollar corporation with research facilities and plants across the U.S. and around the world.

5.0 RESULTS

Staff from the 106 Group conducted a Phase II architectural history survey of the 3M campus on January 27 and February 9, 2009. Greg Mathis, M.C.R.P., served as principal investigator and conducted the fieldwork with Miranda Van Vleet, M.H.P.

5.1 UPDATED PROPERTY EVALUATION

The previous Phase II evaluations of the 3M campus were conducted more than 10 years ago. The results of those studies included a recommended period of significance of 1910-1948. The buildings on the campus that were not constructed within that period of significance were not evaluated at that time. In addition, the buildings that were a part of the campus, but were not originally constructed by 3M, were also not included in those studies. Since that last study was completed 1997, many buildings have been demolished and others have been altered. Moreover, many buildings have now reached 50 years of age, which is the minimum age that is typically required for a property to be considered eligible for listing on the NRHP. Therefore, it was necessary to reconsider the period of significance, re-evaluate all of the buildings on the 3M Main Plant campus, and reconsider the boundaries of the 3M Main Plant Historic District.

5.1.1 3M Main Plant Historic District, RA-SPC-0449

Description: The 3M Main Plant campus is located in the East Side neighborhood of St. Paul. The campus is roughly bounded on the south by Minnehaha Avenue East; on the southeast by 7th Street East; on the east by North Earl Street; on the north by York Avenue and the CStPM&O; and on the west by Forest Street North, Weide Street, and Arcade Street (Figures 1-2). The campus contains 26 extant buildings, two structures, and one site (Table 2). A description including architectural features and characteristics as well as major alterations of each extant building is included in the following pages.

5.1.1.1 Building 1: 1910, RA-SPC-0450

Location: West of Forest Street North, South of CStPM&O

Building 1, constructed in 1910, was the first building to be constructed by 3M in the St. Paul campus. It is located on the southwest corner of where Forest Street crosses over the railroad corridor. Building 1 was built for the purpose of housing the sandpaper factory and in 1916 a corner of a storage room located on the second floor of Building 1 was converted into a laboratory (Figure 3). Although originally constructed as a three-story building, a fourth-story was added in 1916. The flat-roofed building rests upon a concrete foundation and has an exposed reinforced concrete framing system with brick and glass curtain walls between the structural elements. The tan brick is laid in a six-course common bond. The east elevation is comprised of six bays and the north elevation

is ten bays wide. Both the south and west elevations abut other buildings, Building 2 on the south and Building 3 on the west. Building 1 is fenestrated with 15-light, steel sash, hopper windows set in groups of two, three, or four; 15-light Kalwall, steel sash, awning windows in groups of three; double-leaf steel doors; and a wood panel and glass overhead garage door. A large concrete smokestack, various ventilation shafts, exhaust fans, and a steel exterior staircase are located on the north elevation; a stair tower is located on the east elevation.



FIGURE 3. BUILDING 1, EAST AND NORTH ELEVATIONS, FACING SOUTHWEST

The interior of Building 1 is generally characterized as containing: poured concrete flooring; steel and glass doors; steel I-beam columns; steel trusses; exposed mechanical systems and conduit; and cylindrical suspended fluorescent light fixtures. The exterior walls are of brick while the interior walls vary between brick, concrete block, and square tiles. The layout of interior space varies throughout the building and consists of smaller labs and larger open spaces. The basements of Building 1 contain various mechanical rooms and systems, many of which are divided by chain link fencing. The boilers are located to the northwest, in Buildings 45 and 4. A tunnel on the east wall of the sub-basement connects to a tunnel under Forest Avenue, which at one time led to Building 47 (non-extant), located across Forest Avenue.

5.1.1.2 Building 2: 1920, Addition 1923-1924, RA-SPC-8001

Location: Northwest corner of the intersection of Bush Avenue and Forest Street

Building 2 is a three-story building with a raised basement and a rectangular plan that is located on the northwest corner of the intersection of Bush Avenue and Forest Street. It was built to house various functions for sandpaper production. Constructed as a one-story building in 1920, a two-story addition was added to the top of the building in 1923-1924. The flat-roofed brick building rests upon a concrete foundation and is faced with tan stucco (Figure 4). The east elevation is only partially faced with stucco; the original tan brick, laid in a six-course common bond, is exposed on the northern half of this elevation. The building is fenestrated with replacement one and three-light, fixed, steel sash windows. Segmental, brick arches with three courses of headers are located above the basement windows. The south façade is eight bays wide while the east and west elevations are comprised of ten bays; the north elevation abuts Building 1. The building is accessed via the granite and concrete veneered entrance on the south façade. The entrance contains a pair of double-leaf glass doors. An enclosed skywalk on the east elevation connects the second floor of Building 2 to Building 14. The skywalk is clad with corrugated metal siding and is fenestrated with a paired, six-light, steel sash window.



FIGURE 4. BUILDING 2, FAÇADE AND EAST ELEVATION, FACING NORTHWEST

The interior of Building 2 has been substantially altered throughout the years. A portion of the foundation is visible in the sub-basement of Building 1. The foundation is comprised of sandstone which has been painted. There are round cast iron columns in the basement as well as the first floor; however, second and third stories are of timber post construction. This reflects the later addition of these floors. Floors one, two, and three each contain a number of office and laboratory spaces. The finishes in the offices consist

of commercial grade carpet tile, sheetrock walls, recessed fluorescent light fixtures, and drop tile ceilings. The lab spaces differ in that they contain polished concrete floors, exposed conduit, mechanical, and exhaust systems, and suspended fluorescent box lights. A number of sinks and water return pipes are located throughout the lab spaces. Building 2 contains two staircases: one which is shared with Building 1 on the northeast corner and another on the south side. Both stairways consist of concrete stairs with cast iron railings. A passenger elevator is located off the main entry vestibule and a steel freight elevator connects to Building 1 on the northwest corner.

5.1.1.3 Building 3: 1927-1928, RA-SPC-0451

Location: South of CStPM&O

Building 3 is a one-story, cream-colored brick building that was constructed from 1927-1928 (Figure 5). The original purpose of the building is unknown. Originally, it was a two-story building with a basement but the top two floors have since been removed, leaving just the basement, which is partially exposed. It abuts Buildings 4 and 45 on the north, Building 1 on the east, and Building 14 on the south. A two-story addition, wrapped in corrugated metal siding, is located on the southern third of the building. Building 3 is fenestrated with a single-leaf, steel door.



FIGURE 5. BUILDING 3 (FOREFRONT), NORTH ELEVATION, FACING SOUTH

The interior of Building 3 contains much of the mechanical piping which feeds the other buildings on this portion of the campus. On the interior, the building has polished concrete floors, square columns of poured concrete construction, and poured concrete

interior walls. Electrical conduit and the various mechanical systems are exposed and extend along the ceilings.

5.1.1.4 Building 4: 1922, RA-SPC-8002

Location: South of CStPM&O

Constructed in 1922, Building 4 is comprised of two sections, a tall, one-story section that is three bays wide and a two bay, two-story wing that is located to the east of the one-story section (Figure 6). The original use of the building is unknown but it now houses the power plant on the campus. It faces the CStPM&O railroad corridor and is abutted by Building 1 on the east elevation, Building 45 on the west, and Building 3 on the south. The orange brick building rests upon a concrete foundation and has a flat roof. The roof two-story portion is concealed by brick parapets on its east and west elevations. The building is fenestrated with single and triple 10-light, steel sash, awning windows and single-leaf, steel doors. An exterior steel ladder and steel door for roof access are located on the west elevation of the two-story wing. Various metal chimneys and vents are located on the rooftop.



FIGURE 6. BUILDING 4, FAÇADE, FACING SOUTHEAST

5.1.1.5 Building 45: 1951, RA-SPC-8014

Location: South of CStPM&O

Building 45, constructed in 1951, is a one-story building located directly west of Building 4 (Figure 7). It is three bays wide, with a two bay, two-story wing. It rests upon a concrete foundation and is faced with cream-colored brick laid in a six-course common bond. The building is topped with flat roofs with plain metal cornices. A parapet faced in metal is located on the western portion of the one-story wing; a similar parapet is located on the south elevation of the two-story wing. The fenestration of Building 45 consists of six-over-six, double-hung, and six-light, fixed, steel sash windows and steel doors. An exterior steel ladder and steel door and platform for roof access are located on the west elevation of the two-story wing.

Building 45 houses air compressors and tanks for the site. The floors and ceiling are of poured concrete, the exterior walls are brick, and the interior walls are concrete block.



FIGURE 7. BUILDING 45, FAÇADE, FACING SOUTH

5.1.1.6 Building 14: 1929, Addition 1945, RA-SPC-8003

Location: North side of Bush Avenue

Building 14 is a four-story, flat-roofed building that faces Bush Avenue. Originally constructed as a four-story building in 1929 for sandpaper production, a one-story, metal

clad addition was added to the top of the building in 1945 to house a tape production line (Figure 8). The original, four-story building has an exposed reinforced concrete structural system with brick curtain walls. The tan brick is laid in a five-course common bond. The south elevation is eight bays wide and the east elevation is five bays wide. The west elevation abuts Building 20 and the north elevation abuts Building 3. Building 14 is fenestrated with single and triple 15-light, steel sash windows; single and paired six-over-six, steel sash windows; single, double, triple and quadruple six-light, fixed, steel sash windows; single and quadruple replacement Kalwall, steel sash, fixed and awning windows with varied lights; and quadruple four-light, steel sash, fixed windows. There is no main entrance on Bush Avenue; however, a steel entrance door is located on the east elevation, facing the alley between Building 14 and Building 2. A one-story addition faced in corrugated metal has been added on top of the building. The addition is flush with the south elevation but is recessed on the north, extending approximately two-thirds the width of the building.



FIGURE 8. BUILDING 14, FAÇADE AND EAST ELEVATION, FACING NORTHWEST

The interior of Building 14 is, largely open with mushroom or square columns spaced approximately 22 feet on-center. A freight elevator and stairway are located on the northeast corner of the building. The floors are of polished concrete; interior walls consist primarily of concrete block while exterior walls are of brick; and there are sliding, steel fire doors manufactured by Stremel Brothers of Minneapolis located throughout the building. The ceiling of the fourth floor consists of fireproofed, steel I-beams while those of the lower floors do not contain beams. The first floor contains the plant engineering maintenance shop and is divided into separate spaces with chain link fencing.

5.1.1.7 Building 20: 1937-1938, Addition 1940-1941, RA-SPC-8004

Location: Northeast corner of intersection of Bush Avenue and Mendota Street

A large addition was constructed on the west elevation of Building 14 from 1937-1941. This addition, known as Building 20, is located on the northeast corner of the intersection of Bush Avenue and Mendota Street. Building 20 is a six-story building with a partially exposed basement that housed various functions of sandpaper and tape production (Figures 9-10). The flat-roofed building rests on a concrete foundation and has an exposed reinforced concrete structural system with brick and glass curtain walls. The tan brick is laid in a six-course common bond. The north and south elevations of Building 20 are 13 bays wide and the west elevation is five bays wide. The building is fenestrated with triple, steel sash, Kalwall, 20-light fixed over one-light awning windows; quadruple, 15-light, steel sash, fixed windows; and a double-leaf steel and glass door on the south elevation. The basement windows are triple Kalwall windows but vary from five to fifteen lights depending on how much of the basement is exposed above grade. The main entrance is located on the east end of the south elevation. The west elevation contains four recessed loading bays on the north end and mechanical pipes on the south end. The north elevation of the building features enclosed stair towers on the east and west ends; several of the windows on this elevation have been infilled with concrete.



FIGURE 9. BUILDING 20, SOUTH AND WEST ELEVATIONS, FACING NORTHEAST



FIGURE 10. BUILDING 20, NORTH ELEVATION, FACING SOUTHEAST

Building 20 was designed so its floors aligned with those of Building 14, forming one continuous building that allowed for very long production lines as, again, the space is largely open with concrete columns. Many of the finishes and characteristics of Building 14 are continued in Building 20. The floors are of polished concrete; interior walls are comprised of concrete block and corrugated metal while exterior walls are of brick; and exposed conduit and pipes are located along the ceiling. A stairwell and freight elevator are located in the northwest corner and an additional stairwell is located on the northeast corner. Underground tunnels which once led to Buildings 21, 22, and 24 are located on the southeast corner of the subbasement. A reception and guard area are located on the first floor, in the southwest corner of the building. This area also once contained a medical facility. The finishes in this area entrance are modern replacements. The second and third basements of Building 20 house various mechanical rooms. The columns on these floors are slightly larger than those on the upper floors.

5.1.1.8 Building 21: 1939, RA-SPC-0455

Location: 900 Bush Avenue

Building 21 is located on the south side of Bush Avenue, between Mendota and Forest streets. Building 21 is a two-story, Classical Moderne style, office building constructed in 1939 to serve as the corporate headquarters of 3M (Figures 11-12). The building was designed by architect Albert Kahn with local architects Toltz, King, and Day (3M 1961). The building rests upon a concrete foundation and is faced with a square panel stone veneer. Each elevation features a colonnade of piers with recessed window panels, a

projecting stone water table, and projecting stone cornice. Each recessed window panel features two, two-over-two, horizontal, steel sash windows that are separated by panels of black granite. The main, or north, entrance of Building 21 is defined by a projecting, flat-roofed pavilion of stone with a door surround of black granite. Further, the entrance features a double-leaf glass and brass door with a large transom; brass detailing above the door; and a sign of brass letters reading “Minnesota Mining and Manufacturing Company.” The upper west corner of the façade features “1939” inscribed in the stone. The south elevation of Building 21 is connected to Building 42 via a two-story, enclosed passage.



FIGURE 11. BUILDING 21, FAÇADE, FACING SOUTHWEST



FIGURE 12. BUILDING 21, ENTRANCE, FACING SOUTH

The interior of Building 21 is centered on a central hall and stairway that extends the depth of the building. The sub-basement is comprised of mechanical rooms and the central hall connects to a tunnel located under Bush Avenue that connects Building 21 to Building 20. The basement level of Building 21 contains a library, computer rooms, a learning center, and a documentation center, all arranged off of a main corridor that runs east to west through the north side of the basement from the central hall. One staircase is located in the center and another is located on the west end. The materials and finishes throughout the basement include historical materials such as marble baseboards, plaster walls, and steel and glass, single-leaf doors in the central hall and main corridor. Some historical, as well as many non-historical finishes are found in most rooms. A tunnel on the south side of this level connects to the basement of Building 42.

The first and second stories retain many of their historic Moderne styled features and finishes. The first floor of Building 21 is accessed via the main entrance on the north elevation. Upon entering the building, there is a small vestibule that provides access to the main lobby via a revolving brass and glass door. The vestibule features a floor consisting of tan marble tiles laid in a circular pattern and mahogany paneling on the walls. The lobby features flooring that consists of large, cream-colored, marble tiles with a tan marble tile inlay; mahogany paneling on the walls with sand finished plaster above; rounded corners; deeply recessed window sills of granite; quilted leather swinging doors; and a coved ceiling with recessed lighting. The lobby also features a curved mahogany reception desk. The lobby leads into the central hall, which acts as the primary circulation space in the building. The central halls on the first and second floor are

connected via an open stairway and an elevator. There are also short halls off of the main halls that extend to the east and west. The finishes throughout these spaces include marble or terrazzo flooring; marble baseboards; sand finished plaster walls, mahogany elevator doors with a brass, “3M” inlay; single- and double-leaf wooden doors with octagonal glass windows; suspended light fixtures of brass and copper; and alternating, square and rectangular, acoustical ceiling tiles. The central staircase consists of marble tile and contains a chrome railing. There are also non-historic cabinets on the second floor.

The spaces off of the central circulation corridor consist of large, open rooms with large, square structural columns. There are three rows of columns running north to south and four rows of columns running east to west. Private offices are located along the north and south exterior walls of these rooms. The main rooms and offices are finished with historic materials that include sand finished plaster walls and mahogany doors with octagonal windows. Non-historic features and finishes in these spaces consist of modern commercial-grade carpeting; suspended fluorescent light fixtures; and acoustical tile ceilings.

5.1.1.9 Building 24: 1949-1951, RA-SPC-0454

Location: North side of Reaney Avenue

Building 24, constructed in between 1949 and 1951 as a tape manufacturing plant, is a two-story, block-long, Modern style building with a partially exposed foundation and a one-story section on the north elevation (Figures 13-14). The building is located on the north side of Reaney Avenue and extends from Mendota Street to Arcade Street. The grade slopes downward from west to east, exposing the greatest portion of the foundation on the east elevation. The building utilizes a reinforced concrete and steel structural system with a tan and red brick veneer. The tan brick is laid in a six-course common bond. Two large bands of rusticated red brick emphasize the horizontality of the building. The windows are located within the bands of red brick and feature continuous concrete sills. The fenestration consists of double and quadruple, four-light, steel sash, awning windows and single and double-leaf steel doors. The east and west elevations are six bays wide while the south elevation contains 22 bays. The north elevation is primarily without windows with the exception of the west end. The main entrance is located on the east façade. The entrance is marked with a projecting concrete pavilion with two sets of double-leaf doors surmounted by steel sash transoms. Two additional, single-leaf doors are located along the south elevation. A one-story wing on the west end of the north elevation contains a loading dock area with nine truck loading docks.



FIGURE 13. BUILDING 24, FAÇADE AND NORTH ELEVATION, FACING SOUTHWEST



FIGURE 14. BUILDING 24, SOUTH ELEVATION, FACING NORTHEAST

The interior of Building 24 contains a tall first story with a mezzanine and a tall second story. The interior features an exposed steel structural system that consists of steel I-beam columns, spaced approximately 25 feet on-center, east to west, and 23 feet on-center, north to south, with steel trusses that support the second story and the roof. The exterior walls are poured concrete below grade and brick above grade while the interior walls are primarily concrete block. The floors are poured concrete except portions of the mezzanine which are steel diamond plate. The lighting throughout the building consists of modern, drop, fluorescent fixtures.

The main entrance and lobby are located on the first floor in the northeast corner of the building. The lobby of the building is modern with acoustic ceiling tile; commercial grade carpeting and tile; a curved wood and Formica reception desk; and suspended, cylindrical light fixtures. An elevator lobby occupies the south end of the lobby. From the lobby, there are a set of double doors that access a main aisle that is located along the north end of the first floor. South of the main aisle there are a few interior offices, break rooms, and restrooms off the main aisle; a large, open, production area with a mezzanine level along the southern two-thirds of the building; and maintenance and dining areas at the west end of the building with a metal mezzanine. The ceiling is comprised of a steel truss system and contains exposed conduit and piping; the roof in the loading dock area is different, however, with a steel I-beam and steel pan system. The U-shaped, mezzanine level is located in the southwest corner of the building. The stairway leading to the mezzanine contains a railing comprised of 3-inch, steel bar stock which curves upward at the top of the landing. The mezzanine is surrounded by guardrails of welded angle iron and features a raised diamond plate floor. The second floor is generally open and is interrupted only by columns. Restrooms are located in the center as well as on the west end. The stairwells are located on either end of the second floor. Two additional stairwells and one elevator are located on the north and south ends of the central section of the second floor.

5.1.1.10 Building 27 (Sanitary Farm Dairies): Ca. 1910, RA-SPC-8005

Location: 888 East Minnehaha Avenue

Constructed circa 1910 by Sanitary Farm Dairies on East Seventh Street, Building 27 is a two-story, brown brick Commercial style building with sandstone trim (Figure 15). The façade features a three-bay storefront with brick columns that rest on a sandstone base. The rectangular openings have brick spandrels. The spandrels and openings are accentuated with a double, rowlock-course border and corner squares of stone. Each opening has three one-over-one windows with metal panels in the upper sash and transoms above. The eastern opening contains the main entrance. Between the first and second stories there is a stone cornice supported by simple modillions. The second story of the façade is comprised six Roman arch window openings. A single rowlock-course with stone keystones, impostes and sills surrounds each opening. These openings are fenestrated with multi-light-over-ten-light windows. The building is surmounted by a

brick parapet. The parapet once featured a cornice located above the arched windows; it has since been removed, exposing a light brown brick. The parapet is surmounted by stone coping. Brick has been replaced in the location of the upper cornice as well as the eastern corner of the façade. A one-story addition has been constructed on the northwest corner of the building, linking it with Building 30. The addition continues the design and materials of the 1910, but with narrower, windowless bays. The secondary elevations are comprised of Chicago brick laid in six-row common bond with tile coping. The windows on these elevations are set in rectangular, tall narrow openings.



FIGURE 15. BUILDING 27, FAÇADE, FACING SOUTHEAST

5.1.1.11 Building 28 (Sanitary Farm Dairies): Ca. 1910, RA-SPC-8006

Location: North side of alley south of Minnehaha Avenue

Building 28 is a one-story, flat-roofed which was constructed circa 1910 (Figure 16). First in use by Sanitary Farm Dairies as a garage and bottle warehouse, it was acquired by 3M in 1942 for use as a lab. The building rests upon a poured concrete foundation and is faced with glazed tile and brown brick. The brick is located at the corners of the building and around each opening. The building is fenestrated with multi-light, steel sash windows, a single-leaf entrance door, and a metal, overhead garage door. Metal coping is located along the roofline.



FIGURE 16. BUILDING 28, EAST AND SOUTH ELEVATIONS, FACING NORTHWEST

5.1.1.12 Building 30: 1946-1948, RA-SPC-8007

Location: 888 East Minnehaha Avenue

Building 30 was constructed as an addition on the north elevation of Building 28 from 1946-1948. The one-story, flat-roofed building rests on a concrete foundation and is faced with brown brick laid in a common bond (Figure 17). A large opening through the center of the façade has been infilled with red brick laid in a common bond. This was likely the location of a row of ribbon windows in the building as indicated by the continuous rowlock header and stone sill located beneath the infill brick. The entrance to Building 30 is located on the northwest corner; it features rusticated brown brick and is accessible through a single-leaf steel door. Metal coping is located along the roofline.



FIGURE 17. BUILDING 30, FAÇADE, FACING SOUTHEAST

5.1.1.13 Building 40 (Water Tower and Pump House): 1948, RA-SPC-8008

Location: North of Reaney Avenue

The water tower, otherwise known as Building 40, is located near the center of the surface parking lot on the block bounded by Reaney Avenue on the north, Mendota Street on the east, Minnehaha Avenue on the south, and Arcade Street on the west. Constructed in 1948 to provide a back up water supply, the water tower rests upon a one-story, tan brick pump house with a concrete foundation (Figure 18). The brick is laid in a five-course common bond and features a soldier course approximately two thirds of the way up the wall as well as brick pilasters on the west and east elevations. The building is without windows and contains a single-leaf, steel door the south facade. The water tower is a spherical shaped steel elevated tank with a metal catwalk around its perimeter. The tank rests on four tubesteel columns, or bents, that rest on the brick pilasters of the pump house. The bents are reinforced with horizontal and diagonal bracing. A steel ladder is located on the southeastern column and provides access to the tank.



FIGURE 18. BUILDING 40, 3M WATER TOWER AND PUMP HOUSE, FACING NORTHWEST

5.1.1.14 Building 41 (First Merchants State Bank): 1949, Addition 1956, RA-SPC-8009

Location: 879 East Seventh Street

Located on the northeast corner of the intersection of East Seventh Street, Mendota Street and Minnehaha Avenue, Building 41 was constructed in 1949 to house the First Merchants State Bank. Building 41 is a one-and-a-half-story, triangular shaped, Modern style building with a partially exposed basement on the west elevation and a two-story addition on the north and east elevations constructed in 1956 (Figure 19). The building is faced with a tan brick laid in a modified basketweave pattern and features a two-course, rusticated, rowlock cornice. The fenestration consists of replacement steel sash, fixed and awning windows and single-leaf steel doors. Metal coping is located along the roof and an interior brick chimney is located along the west elevation. The main entrance is located on the east elevation and is marked by a one-story, open-air, entry bay faced in metal. The southwest corner of the building is rounded and faced with vertically ribbed

metal and aggregate. The west elevation contains a secondary entrance on its northern end.



FIGURE 19. BUILDING 41, FAÇADE, FACING NORTHWEST

5.1.1.15 Building 42: 1950, Addition 1974, RA-SPC-8010

Location: North side of Reaney Avenue

Constructed in 1950 to house offices, Building 42 is an eight-story, Modern style, concrete structure with a partially exposed basement (Figure 20). Originally constructed as a five-story building in 1950, three additional floors were added in 1974. These three floors are divided on the north and south into three large, projecting bays. The entire building is faced with square, limestone and concrete panels and features corner pilasters. The horizontality of the original portion of the building is emphasized by the bands of fixed, steel sash, ribbon windows surmounted by steel grate awnings on the north and south elevations. The east and west elevations are without windows, however the west elevation contains a one-story, projecting entry vestibule. The main entrance, located on the south façade, is marked with a horizontal steel awning and contains a pair of double-leaf, steel and glass doors. The north elevation of Building 42 is connected to Building 21 via a two-story enclosed passage. A large, one-story, mechanical room faced in corrugated metal is located on top of the roof.



FIGURE 20. BUILDING 42, FAÇADE, FACING NORTHEAST

The interior of Building 42 contains three circulation spaces: a central space with elevators and a staircase; a staircase on west end of the building; and a staircase and freight elevator on the east end. The basement of Building 42 contains the employee cafeteria, a mailroom, a loading dock on the northeast corner, and mechanical rooms. The finishes throughout the basement are modern replacements, consisting of commercial grade carpeting, sheetrock walls, fluorescent light fixtures, and drop ceilings.

The main entrance on the first floor of the south side of the building features terrazzo flooring, a large, wooden guard desk, and a terrazzo staircase with chrome railing. Generally, the upper floors of Building 42 consist of private offices and large, open office spaces interrupted by square columns. Modern commercial-grade carpeting is used on each floor, as are fluorescent light fixtures and tile ceilings. Restrooms, storage, and mechanical spaces are typically located near the central bank of elevators on each floor. The wall finish is plaster on floors one through five. Floors one through five contain private offices located along the exterior walls. These offices contain wood doors with octagonal windows of fluted glass. Although floors six through eight were added at a later time, they maintain the same general layout as floors one through five. The walls of floors six through eight consist of sheetrock and the offices along the exterior contain steel and glass doors.

5.1.1.16 Building 84: Ca. 1995, RA-SPC-8011

Constructed circa 1995, Building 84 is a one-story, four stall garage (Figure 21). The frame garage rests upon a concrete foundation, is faced with plywood paneling, and has a side gable roof that is covered with asphalt shingles. The north elevation is fenestrated with one metal panel overhead garage door and three roll-up metal garage doors.



FIGURE 21. BUILDING 84, FAÇADE, FACING SOUTHWEST

5.1.1.17 Building 85: Ca. 1980, RA-SPC-8012

Building 85, constructed circa 1980, is a one-story frame shed that rests upon a concrete foundation, is faced with corrugated metal siding, and has a side gable roof that is covered with corrugated metal (Figure 22). Two sliding doors are located on the north elevation. To the immediate east of Building 85 is a small, circa 1995, frame shed that has a vertical wood siding, a shed roof, and features two, double-leaf, wood doors on the north elevation.



FIGURE 22. BUILDING 85, FAÇADE AND WEST ELEVATION, FACING EAST

5.1.1.18 Building 99 Complex: various dates, RA-SPC-8013

Location: 878 Duchess Street

The Building 99 complex consists of a conglomeration of pre-3M buildings and a number of additions constructed by 3M over time. Collectively, from the oldest extant building to the last addition, the complex represents a century of construction activity and reflects the evolution in the design of industrial buildings from the early 1890s through the late 1990s. The pre-3M portions include an office and industrial spaces used for iron and steel production. As a whole, the pre-3M structures and the additions constructed by 3M housed the maintenance and fabrication facilities of 3M.

The oldest building within the Building 99 Complex is Building 80, which was constructed circa 1893 (Figure 23). The two-story, flat-roofed, dark brown brick building and likely served as the office for the Roberts Architectural and Ornamental Iron Company. The façade of Building 80, which faces south towards the CStPM&O and the Phalen Boulevard corridor, is four bays wide while the east and west elevations are seven bays long. The brick is laid in a seven-course common bond. The window openings have segmental, brick arches with two courses of headers and limestone sills. Some of the windows have been replaced with rectangular, six-light, Kalwall windows, while others retain their original wood sash, but are covered with plywood. A double-leaf, wood and glass panel door is located on the second floor of the south elevation and a single-leaf entrance door is located on the first floor of the east elevation. The building

features a parapet comprised of a slightly projecting, rusticated brick entablature and cornice surmounted by a metal coping.



FIGURE 23. BUILDING 80, FAÇADE AND EAST ELEVATION, FACING NORTHWEST

The interior of Building 80 is an open space and features poured concrete floors; plaster walls; simple, wooden, door and window moldings and entablatures; and exposed conduit and mechanical systems on the first and second stories. Staircases leading from the first floor to the basement and second floors are located along the east wall. The poured concrete staircase leading into the basement is accessible through an arched doorway. The basement extends approximately one-half the length of the building floor and has walls consisting of poured concrete as well as concrete block. The basement features an American Radiator Company, water tube boiler. The staircase to the second floor is of cast-iron and contains treads manufactured by the Mason Safety Tread Company of Boston in 1892. The staircase also contains an ornamental, cast-iron balustrade.

The second oldest building in the Building 99 complex is known as Building 83, located at the north end of the complex (Figure 24). It appears to have been constructed circa 1890 by Herzog Iron Works for use as a foundry. It features an elevated, gable-roofed, central section with shed-roofed side aisles that is oriented in a north-south direction. There are two-story sections over the side aisles at the south end of the building. Building 83 is abutted by “buildings” on its south, east, and west elevations. The building rests upon a concrete slab, is faced with Chicago brick, and contains brick pilasters on its north and south elevations. The north and south elevations each contain segmental, brick arched windows and doorways and, although the brick sills and lintels

remain, the openings have been covered with plywood. The windows of the clerestory have been replaced with steel sash, Kalwall windows. The upper portion of the south wall contains a painted wall sign which simply states “Herzog.” A chain-link fenced area is located along the north elevation; this area contains a one-story loading dock addition. The interior of Building 83 is a large, open space. It features poured concrete floors and a timber structural system with timber columns. The timber structural system has been reinforced with a steel I-beam system in order to support a gantry crane that runs the length of the building.

The third oldest addition to the Building 99 complex is Building 81, which was constructed circa 1935. Building 81 was constructed between Buildings 80 and 83; however, it did not connect to either of them. Building 81 is a one-story structure with an elevated, gable-roofed, central section with shed-roofed side aisles that is oriented in an east-west direction. The building features Chicago brick exterior walls laid in stretcher bond and a steel structural system on the interior. The clerestory has replacement Kalwall windows and the original window openings on the remainder of the structure have been infilled. On the interior, the building has a poured concrete floor; steel I-beam columns; steel trusses and steel purlins with wood roof decking; and a five-ton gantry crane. Building 81 is entirely surrounded on all sides by other buildings within the Building 99 complex.

An addition known as Building 82 was constructed circa 1950, linking Buildings 81 and 83. This one-story, flat-roofed building features brick walls; steel I-beam columns and beams; wood purlins and wood roof decking; and a low-pitched, front gable roof. On the north and south, the building utilizes the walls of Buildings 83 and 81 for its exterior walls. Building 82 is entirely surrounded on all sides by other “buildings” within the Building 99 complex.



FIGURE 24. BUILDING 83, NORTH ELEVATION, FACING SOUTH

Building 95 was also constructed in 1950, on the northeast corner of the Building 99 complex. At the time of its construction it was a freestanding structure and did not connect to the others on site. The one-story, steel-frame structure rests upon a concrete slab foundation (Figure 25). It is faced with corrugated metal siding and its front gable roof is covered with asphalt shingles. The building is fenestrated with Kalwall, six-light over awning, steel sash windows, a single-leaf entrance door, and a wood panel, overhead garage door. A one-story, flat-roof addition has been constructed on the southwest corner of the building.

The interior of Building 95 features concrete floors; sheetrock, plywood, and angular corrugated metal walls; a few original six-over-six, steel sash, industrial windows on an interior wall; and a jib crane.

The addition known as Building 96 is a one-story, flat-roofed structure constructed in 1951. The addition, which linked Building 81 to Building 80, housed an assembly shop (Figure 26). The structure abuts Building 80 on its south elevation, Building 99 on its west, Building 81 on its north, and Building 98 on its east. Only the south elevation is exposed. This elevation is nine bays wide, is faced with red and buff-colored brick laid in a six-course common bond, and is fenestrated with Kalwall, 12-over-one, awning, steel sash windows and one, metal panel, overhead garage door.



FIGURE 25. BUILDING 95, FAÇADE AND NORTH ELEVATION, FACING SOUTHEAST



**FIGURE 26. BUILDING 96 (BACKGROUND WITH BUILDING 80 IN THE FOREGROUND),
FACING NORTH**

The interior of Building 96 is a large open space with a mezzanine and office on the north. The floors are of polished concrete. The lower portions of the walls are concrete block, while the upper portions are brick. The steel trusses run north to south throughout the building. However, one truss runs east to west through the center of the ceiling; it splits into a Y-shape at both the east and west ends. A 10-ton gantry crane runs east to west through the building.

Also in 1951, a small boiler room addition was constructed on the northwest corner of Building 81. This one-story, flat roofed structure is known as Building 97.

Between 1957 and 1958, an addition was constructed on the east side of the Building 99 complex. It abuts Building 95 on the north and numerous buildings on the west. This addition, known as Building 98, rests upon a concrete foundation, is faced with tan brick, and is fenestrated with Kalwall, six-over-one, awning, steel sash windows (Figure 27). The southern half of the addition is two stories with the second floor devoted to office space. The northern half of the addition is one-story.



FIGURE 27. BUILDING 98, SOUTH ELEVATION, FACING NORTH

The interior of Building 98 is similar to the others in this complex. The first floor is open except for interruption by steel, I-beam columns. It features polished concrete floors, brick exterior walls, and steel trusses. The office space on the second floor contains modern finishes and features such as commercial-grade carpeting, sheetrock walls, fluorescent light fixtures, and a drop ceiling.

The next addition to the Building 99 complex did not occur until 1964. The building abuts Building 99 on the west, Building 83 on the northeast, Building 82 on the east, and Building 97 on the south. This addition, known as Building 91, is a two-story building that utilizes a steel and concrete structural system (Figure 28). The north elevation of the building is ten bays wide and is faced with tan brick laid in a five-course common bond. It is fenestrated with one-light, fixed, steel sash windows with concrete sills and a double-leaf steel door. Metal coping is located along the roofline.



**FIGURE 28. BUILDING 91 (BUILDING 99 IN FOREGROUND), NORTH ELEVATION,
FACING EAST**

The interior of Building 91 is similar to others in this complex in that it contains a polished concrete floor, steel I-beam columns, masonry walls, and a gantry crane. The east wall, which was the original exterior wall of Building 81, is of brick.

The final addition to the Building 99 complex is Building 99, which was constructed in 1990 and designed by architects Toltz, King, Duvall, Anderson and Associates (TKDA; Figure 29). This addition is located on the west side of the Building 99 complex and was constructed on the same location as Building 89, which was razed for its construction. Building 99 contains office, shop, and assembly space. The flat-roofed, steel-frame building rests upon a poured concrete foundation and is faced with pre-cast concrete panels with an exposed aggregate finish. The southwest corner contains a three-bay loading dock with metal panel overhead doors. The northwest corner, which contains

office space, is two stories while the remainder of the building is a tall one-story. The northwest corner contains a recessed main entrance and fixed sash, ribbon windows.



FIGURE 29. BUILDING 99, FAÇADE, FACING EAST

The lobby and office spaces in Building 99 have modern finishes and features such as ceramic tile flooring, sheetrock walls, fluorescent light fixtures, and tile ceilings. The shop and assembly area is an open, expansive space interrupted by steel I-beams. The flooring consists of polished concrete, the walls are of masonry, and the ceiling is comprised of steel trusses, I-beam stringers, and corrugated, steel roof decking.

5.1.1.19 StPS&TF / CStPM&O / C&NW / UP, RA-SPC-6065

This railroad segment is part of the CStPM&O mainline constructed by the StPS&TF in 1872 (Figures 30-31). The mainline line runs from St. Paul to the Stillwater Junction, located southwest of the City of Stillwater (Prosser 1966:163). Within the 3M Main Plant, the mainline line runs in an easterly direction, roughly paralleling Phalen Boulevard, bisecting the 3M Main Plant campus. The railroad is comprised of two sets of active mainline tracks with multiple sidings located at various locations, all set on a raised bed of stone ballast. The tracks consist of steel rails laid on wood ties. Historically, there were sidings into the 3M Main Plant, of which the corridors are intact through the proportion of the campus located on the south side of the tracks. There were also spurs to the former Herzog Iron Works to the north, although they are non-extant.



FIGURE 30. STPS&TF / CSTPM&O / C&NW / UP, FACING EAST



FIGURE 31. STPS&TF / CSTPM&O / C&NW / UP, FACING WEST

TABLE 2. 3M Buildings, Main Plant Campus, Saint Paul

Building No.	Location/Address	Date(s) of Construction	Date Razed	Use	Description	Contributing	Source Notes
1	West of Forest St. N., south of Phalen Blvd.	1910	N/A	Sandpaper factory	Extant	Yes	3M Appraisal Dept. date 1911
2	NW corner of Forest St. N. & Bush/Fauquier Ave.	1920, 1923-1924 addn.	N/A	Sandpaper factory	Extant	Yes	3M Appraisal Dept.
3	West of Forest St. N., south of Phalen Blvd.	1922, 1927-28 recon.	N/A	Factory	Extant	Yes	3M Appraisal Dept.
4	West of Forest St. N., south of Phalen Blvd.	1922	N/A	Boiler Room	Extant	Yes	3M Appraisal Dept.
5	North side of Building 1, south of railroad tracks	Unknown	1938	Shed	Non-extant	N/A	3M Appraisal Dept., no record prior to 1920
6	unknown	1926	1934	Unknown	Non-extant	N/A	3M Appraisal Dept.
7	West of Forest St. N., south of Phalen Blvd.	c. 1923	Unknown	Unknown	Non-extant	N/A	3M Appraisal Dept date 1926
8	West of Forest St. N., south of Phalen Blvd.	1923	2000-2006	Unknown	Non-extant	N/A	3M Appraisal Dept. date 1926
9	East of Mendota St., south of Phalen Blvd.	c. 1910	1937	Unknown/Sanitary Farm Dairies	Non-extant	N/A	Sanborn Insurance Maps; date of acquisition 1929
10	East of Mendota St., south of Phalen Blvd.	c. 1910	Unknown	Cooling shed/Sanitary Farm Dairies	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1929
11	East of Mendota St., south of Phalen Blvd.	1925, 1928 addn.	2000-2006	Glue department	Non-extant	N/A	3M Appraisal Dept. dates 1926 and 1929
12	East of Mendota St., south of Phalen Blvd.	1927, 1951 recon.	2000-2006	Glue department	Non-extant	N/A	3M Appraisal Dept. date 1928
13	unknown	1928, 1951 recon.	unknown	unknown	Non-extant	N/A	3M Appraisal dept.
14	North of Bush/Fauquier Ave.	1929, 1945 addn.	N/A	Mineral grading/storage	Extant	N/A	3M Appraisal dept.
15	unknown	Unknown	1937	Unknown/Sanitary Farm Dairies	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1929
16	Fauquier Ave.	Unknown	1939	Construction office	Non-extant	N/A	3M Appraisal Dept.
17	NW corner of E. 7 th St. & Forest St.	Unknown	1969-1974	Unknown/Hamm Brewing Co.	Non-extant	N/A	3M Appraisal dept. date of acquisition 1930
18	West of Forest St. N., south of Phalen Blvd.	1934	2000-2006	Unknown	Non-extant	N/A	3M Appraisal Dept.
19	unknown	1936	Unknown	Unknown	Non-extant	N/A	3M Appraisal Dept.
20	NE corner of Bush/Fauquier Ave. & Mendota St.	1937-1938, 1940-1941 addn.	N/A	Factory	Extant	Yes	3M Appraisal Dept.
21	900 Bush Ave.	1939	N/A	Office	Extant	Yes	Sanborn Insurance Maps; 3M Appraisal Dept.
22	SW corner of Mendota St. & Bush/Fauquier Ave.	1941	2000-2006	Tape production	Non-extant	N/A	Sanborn Insurance Maps; 3M Appraisal Dept.
23	SW corner of Mendota St. & Bush/Fauquier Ave.	1941	2000-2006	Tape production	Non-extant	N/A	3M Appraisal Dept.
24	751 Mendota St.	1949-1951	N/A	Tape production	Extant	Yes	3M Appraisal Dept. date 1949-1951
26	NW corner of Mendota St. & Bush/Fauquier Ave.	c. 1935	2000-2006	Compounding building/Sanitary Farm Dairies	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1942
27	886 Minnehaha Ave. E.	c. 1910	N/A	Lab/Sanitary Farm Dairies	Extant	Yes	3M Appraisal Dept. date of acquisition 1942
28	Alley south of Minnehaha Ave. E.	c. 1910	N/A	Lab/Sanitary Farm Dairies	Extant	Yes	3M Appraisal Dept. date of acquisition 1942
30	888 Minnehaha Ave. E.	1946-1948	N/A	unknown	Extant	Yes	3M Appraisal Dept.
31	North of E. 7 th St., south of railroad tracks	Pre-1937	1969-1974	Office/Paper Calmenson Co.	Non-extant	N/A	Historical aerial photos; 3M Appraisal Dept. date of acquisition 1946
32	unknown	Unknown	Unknown	Unknown/ Paper Calmenson Co.	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1946
33	unknown	Unknown	Unknown	Unknown/ Paper Calmenson Co.	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1946
34	unknown	Unknown	Unknown	Unknown/ Paper Calmenson Co.	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1946
35	North of E. 7 th St., south of railroad tracks	Pre-1937	1951-1953	Machinery warehouse/ Paper Calmenson Co.	Non-extant	N/A	3M Appraisal dept. date of acquisition 1946
36	North of E. 7 th St., south of railroad tracks	Pre-1937	1951-1953	Finished products/ Paper Calmenson Co.	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1946
37	North of E. 7 th St., south of railroad tracks	Pre-1937	1951-1953	Finished products/ Paper Calmenson Co.	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1946

Building No.	Location/Address	Date(s) of Construction	Date Razed	Use	Description	Contributing	Source Notes
38	North of E. 7 th St., south of railroad tracks	Pre-1937	1951-1953	Crane shed/Paper Calmenson Co.	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1946
39	East of Forest St., north of railroad tracks	1950	2006-2009	Tanks	Non-extant	N/A	3M Appraisal Dept.
39	North of E. 7 th St., south of railroad tracks	c. 1945	1947-1953	Oil pump house	Non-extant	N/A	Historical aerial photos; Sanborn Insurance Maps
40	South of Reaney Ave., west of Mendota St.	1948	N/A	Water tower and pump house	Extant	Yes	3M Appraisal Dept.
41	879 E. 7 th St.	1949, 1956 addn.	N/A	Unknown/First Merchants State Bank	Extant	Yes	Sanborn Insurance Maps
42	East of Mendota St., north of Reaney Ave.	1950, 1974 addn.	N/A	Office	Extant	Yes	Sanborn Insurance Maps; 3M Appraisal Dept. date 1950
43	NE corner of Fauquier Ave. & Forest St.	1950	2000-2006	Office	Non-extant	N/A	3M Appraisal Dept.
44	unknown	Unknown	Unknown	Unknown	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1950
45	East of Forest St., south of railroad tracks	1951	N/A	Compressor room	Extant	Yes	3M Appraisal Dept.
46	unknown	Unknown	Unknown	Unknown	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1951
47	North of 7 th St. E., south of railroad tracks	1953-1955	2000-2006	Abrasive's manufacturing building	Non-extant	N/A	Milburn; Sanborn Insurance Maps
49	NW corner of Arcade St. & Bush Ave.	1951	2000-2006	Solvent pump shed	Non-extant	N/A	3M Appraisal Dept.
50	NW corner of Arcade St. & Bush Ave.	c. 1953	2000-2006	Solvent storage building	Non-extant	N/A	Sanborn Insurance Maps
51	East of Arcade St., south of railroad tracks	c. 1953	2000-2006	Drum storage	Non-extant	N/A	Sanborn Insurance Maps
53	unknown	Unknown	Unknown	Unknown	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1948
54	unknown	Unknown	Unknown	Unknown	Non-extant	N/A	3M Appraisal Dept. date of acquisition 1948
80	North of Phalen Blvd., east of Duchess St.	c. 1880	N/A	Office/Herzog Iron Works	Extant	Yes	Sanborn Insurance Maps; 3M Appraisal Dept. date of acquisition 1948
81	878 Duchess St.	c. 1935	N/A	Shop	Extant	Yes	Sanborn Insurance Maps; Historical aerial photos; 3M Appraisal Dept. date of acquisition 1948
82	878 Duchess St.	c. 1950	N/A	Shop	Extant	Yes	Sanborn Insurance Maps; Historic aerial photos; 3M Appraisal Dept. date of acquisition 1948
83	878 Duchess St.	c. 1890	N/A	Shop/Herzog Iron Works	Extant	Yes	Sanborn Insurance Maps; 3M Appraisal Dept. date of acquisition 1948
84	North of Phalen Blvd., east of Duchess St.	c. 1995	N/A	Storage garage	Extant	No	Aerial photos
85	North of Phalen Blvd., east of Duchess St.	c. 1980	N/A	Storage shed	Extant	No	Aerial photos
89	West of Duchess St.	c. 1945	1988-1991	Assembly	Non-extant	N/A	Sanborn Insurance Maps; Historical aerial photos
91	878 Duchess St.	1964	N/A	Shop	Extant	Yes	Sanborn Insurance Maps; Historical aerial photos
94	East of 878 Duchess St.	c. 1950	1956-1957	Storage	Non-extant	N/A	Sanborn Insurance Maps; Historical aerial photos
95	878 Duchess St.	1950	N/A	Machinery/storage	Extant	Yes	3M Appraisal Dept.
96	878 Duchess St.	1951	N/A	Assembly shop	Extant	Yes	3M Appraisal Dept.
97	878 Duchess St.	1951	N/A	Boiler room	Extant	Yes	3M Appraisal Dept.
98	878 Duchess St.	1957-1958	N/A	Machine shop/office	Extant	Yes	Sanborn Insurance Maps
99	878 Duchess St.	1990	N/A	Office/shop/assembly	Extant	Yes	Cultural Resources Survey Report (106 Group 1994b)
n/a	St. Paul, Stillwater & Taylor's Falls / Chicago, St. Paul, Minneapolis & Omaha / Chicago & North Western / Union Pacific Railroad	1872	N/A	Railroad	Extant	Yes	Prosser 1966
The following buildings could not be located in historical records							
25	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
29	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
48	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	

Building No.	Location/Address	Date(s) of Construction	Date Razed	Use	Description	Contributing	Source Notes
52	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
55	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
56	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
57	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
58	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
59	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
60	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
61	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
62	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
63	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
64	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
65	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
66	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
67	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
68	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
69	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
70	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
71	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
72	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
73	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
74	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
75	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
76	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
77	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
78	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
79	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
86	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
87	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
88	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
90	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
92	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	
93	Unknown	Unknown	Unknown	Unknown	Non-extant	N/A	

History: 3M was founded in 1902 in Two Harbors, Minnesota by five businessmen; Henry S. Bryan, superintendent of the Duluth & Iron Range Railroad; Herman W. Cable, the proprietor of a Two Harbors meat market; John Dwan, an attorney; William A. McGonagle, executive of the Duluth, Missabe & Northern Railroad; and Dr. J. Danley Budd. Their goal was to mine the diamond-hard corundum from Minnesota's North Shore to sell it in bulk to grinding wheel manufacturers (Thureen 1992:40).

The young company faced a number of setbacks in its early years, its mineral deposit of corundum proved to be an inferior abrasive material and the humidity from Lake Superior hampered efforts to successfully manufacture sandpaper in Two Harbors. The company quickly went into debt and St. Paul businessmen Edgar B. Ober and Lucius P. Ordway gained controlling interest in the company in 1905. In 1907, important figures in the future of 3M, William L. McKnight and Archibald G. Bush, were hired as the first bookkeepers in the Duluth office (Milburn 2006:31-32).

3M Moves to St. Paul

In 1909, Lucius P. Ordway paid to move 3M's headquarters to St. Paul even though the company was already in debt to him for over \$225,000. In 1910, construction began on a new three-story plant in St. Paul's Dayton's Bluff neighborhood, approximately 1½ miles from downtown St. Paul (106 Group Ltd. 1994b:8, Huck 1955:58). The original plant, known as Building 1, was constructed at 900 Bush Avenue for a cost of \$35,302. The building was constructed in the midst of an industrial area located on the south side of the CStPM&O tracks. Although this location was close to downtown St. Paul, it became a headache when expansion was needed. Due to the location of the plant between other industrial developments and surrounded by residential development on the south, this location proved to be problematic because the purchase and demolition of surrounding buildings became a necessity whenever 3M needed to expand its facilities (Huck: 1955:58).

One of the early innovations of 3M was an effort by William McKnight, then the company sales manager, to meet with clients to discuss their sandpaper products. This one-on-one contact with clients was an innovation in marketing. By 1914, due to client feedback the company learned that the corundum they were using was inferior, so 3M began importing graphite from Spain (Milburn 2006:32). 3M continued to be inundated with complaints about its sandpaper products and it was later discovered that a shipment of Spanish graphite had been contaminated by olive oil, which caused the graphite to eventually lose its bond with the adhesive products. In 1916, in response to the bad client feedback and ongoing issues with quality control associated with abrasives materials, 3M developed a laboratory on the second floor of Building 1 to test materials and products (3M 2002:126). Building 1 was also where the company developed an abrasive cloth product that used artificial mineral aluminum oxide. The product, "THREE-M-ITE", became wildly popular and allowed 3M to propel their products into the national market (Huck 1955:75). It was this commitment to listening to clients, quality control, and innovation that allowed 3M to rise to national and international prominence and become a model for companies around the world.

Between 1914 and 1919, the nation's consumption of abrasive products increased 49 percent (Huck 1955:91). As a result of its commitment to quality control and listening to consumers, 3M was able to finally grow, albeit slowly, in the years leading up to U.S. involvement in World War I and in 1916 the company was ready to expand. Edgar B. Ober, then the president of 3M, recommended to, then general manager, McKnight that instead of increasing the size of the St. Paul facility that 3M should relocate to a city closer to raw materials and customers. McKnight said, "The job of moving the entire plant to another city looked just too big to me, so we expanded in St. Paul and continued to be hampered by high freight costs." Due to a lack of building materials during the war a partial fourth story, measuring 85 by 30 feet, was added to Building 1 instead of constructing a new building (Huck 1955:90). At this point, Building 1 contained approximately 67,740 square feet of space (Buildings Consulting Group, Inc. 2009).

Early Expansion in St. Paul

The successful testing, development, and production of waterproof sandpaper prompted 3M to expand their St. Paul plant in the 1920s. In 1920, Building 2 was constructed as a one-story building at 900 Bush Avenue to house glue-bond sandpaper production. From 1923-1924, a two-story addition was added on to the top of Building 2. In 1922, Building 3 was constructed for the purpose of manufacturing waterproof sandpaper. In an effort to save money, Building 3 was built without fireproof construction and on December 3, 1927, a fire destroyed the building. This came at a time when "WETORDRY" was in high demand and 3M rushed to rebuild the sandpaper plant, this time using fireproof construction. The second Building 3 was completed in February of 1928 (Huck 1955:119-120). The rebuilt one-story, reinforced concrete plant consists of approximately 11,717 square feet of floor space (Buildings Consulting Group, Inc. 2009).

In 1922, 3M constructed Building 4, a boiler room, and circa 1923 Buildings 7 and 8 were built. In circa 1925, Building 11 was constructed to house the glue department. An addition was constructed on Building 11 in 1928. In 1929, a four-story mineral grading and storage facility was constructed at 900 Bush Avenue, known as Building 14. An important part of the 3M facility, the machine shop, was established in 1928 in the basement of Building 2 (3M August 1950:8). In 1930, due to production increases, the machine shop was moved to the basement of the newly completed Building 14 (3M 1950:9).

Growth During the Great Depression

As the demand for "SCOTCH" Brand products increased in the 1930s, 3M needed to expand their facilities however they decided to work with the space they had due to an unfavorable tax situation in Minnesota in the mid-1930s (Huck 1955:148). In 1935, the Farmer-Labor administration under Governor Floyd Olson proposed enforcement of a corporate-excess tax law which was on the statute books from 1878 (Huck 1955:167). After a 1937, lawsuit in which the Minnesota State Supreme Court repealed the corporate-excess tax law, 3M was ready to expand its Main Plant campus in the late 1930s. In September of 1937, McKnight announced a half-million-dollar expansion program (Huck 1955:169-170). This expansion corresponded with another plan announced by McKnight that same year to develop a Central Research Laboratory, New

Products Department, Products Fabrication Laboratory, and expand the Engineering Department. As part of this expansion effort, construction on Building 20 started in 1937 and was completed in 1938. The Central Research Laboratory opened in 1937. A new corporate headquarters was completed in 1939 (Huck 1955:148). Known as Building 21, the new corporate headquarters was a stately three-story office building by architects Toltz, King and Day with Albert Kahn as an Associated Architect (3M 1961). Continuing the pattern of growth, the New Products Department was established in 1940, and an addition to Building 20 was started in 1940 and completed in 1941. In 1940, the machine shop was moved to the first floor of Building 20 (3M August 1950:9).

Growth During World War II

3M continued its expansion effort as the country entered World War II. In 1941, construction began on a new tape department factory, known as Building 22 (Huck 1955:148). The one-story building with a basement contained 30,000 square feet of space in order to add 200 new employees to the already 700 employed in the tape department (3M July 1941:5, 12). Also in 1941, construction began on another tape department factory, Building 23, just west of Building 22. Buildings 22 and 23 were the only new structures added to the 3M Main Plant campus during World War II. The buildings were constructed under U.S. Certificates of Necessity (Huck 1955:232).

As the U.S. war effort continued, building supplies became limited. As a result, 3M faced space limitations because of increased operations; however it could not obtain the materials to construct new buildings. Instead of constructing new buildings on the Main Plant campus, 3M leased the six-story Benz Building at the northwest corner of Grove and Olive Streets in St. Paul and moved its Central Research Laboratory there, where it remained until the mid-1950s when it was moved to the new 3M Campus in Maplewood, Minnesota (3M 1943). It also appears that 3M started to lease the former Herzog Iron Works, located across the CStPM&O tracks, around this time to provide the company with additional space. Despite the inability to construct new buildings during this period and the relocation of the Central Research Laboratory, the workforce of Main Plant campus continued to grow from 3,500 in 1941 to 5,300 in 1943.

Post World War II Boom

The conclusion of World War II marked the beginning of a sustained building boom on the Main Plant campus that lasted for more than a decade. This period, which begins around 1945 and continues through the mid to late 1950s, is characterized by an almost continuous cycle of land acquisition and construction activity on the campus that included the construction of new buildings, additions to existing buildings, and the acquisition of surrounding land and buildings to meet the administrative, development, production and maintenance needs of a rapidly growing corporation.

The increased demand for production equipment during the war years, made it necessary for 3M to send some of its machine shop work outside of the Twin Cities. After the war, the machine shop in Building 20 was providing maintenance services to all 3M installations in St. Paul (3M August 1950:11). When the company was able to purchase machine tools again after the war, the first floor of Building 20 soon become

overcrowded. There was no additional space available in the Main Plant, so 3M took over the former Herzog Iron Works, which was located just northeast of the 3M Main Plant campus across the CStPM&O tracks, for this purpose and acquired title to this property in 1949. The two-story brick Herzog office building at 879 Russell Street was retained by 3M as Building 80; the one-story, Herzog foundry at 882 Russell Street was retained as Building 83, for a welding shop (Sanborn Insurance Company 1926-1939, 1926-1951); and the one-story, steel-frame building constructed circa 1935 and known as Building 81, was also retained by 3M. By the late 1940s, the Herzog buildings housed the construction and machine work for the maintenance shop (3M August 1950:11).

In 1945, 3M added several stories to Building 14. Around the same time Building 39 and 89 were constructed. The Building 39 complex was comprised of an oil pump house and several storage tanks. Building 89 was an addition to the Herzog complex and was used as an assembly shop. Ground was broken on Building 30 in 1946 and completed in 1948. The 3M Main Plant expansion continued when a reinforced concrete and steel water tower and brick pump house was constructed in the parking lot between Arcade and Mendota Streets, south of Reaney Avenue in 1948. In July 1949, 3M acquired a certificate of title to the former Herzog Iron Works property, a property it had been leasing since World War II, for use as shop and storage space (Ramsey County Recorder and Register of Titles 1949:Cancelled Certificate Number 122866).

From 1949-1951, construction occurred on a two million dollar tape finishing plant known as Building 24 (Comfort 1962:189). The two-story, steel-frame brick structure was completed in 1951. The block long building consists of 209,740 square feet of floor space (Buildings Consulting Group, Inc. 2009).

In 1950, 3M President Carlton announced a nationwide \$20 million post-war expansion program. More than a dozen buildings were constructed or expanded on the Main Plant campus during this initiative. In 1950 alone, Building 43, 82, 94, and 95 were all constructed on the Main Plant campus. Building 43 was an office building. The one-story brick building known as Building 82 housed the 3M grinding shop (3M August 1950:11). Building 94 was a storage area and Building 95 was constructed to house machinery and storage.

The following year, in 1951, in addition to the completion of Building 24, Buildings 42, 45, 49, 96 and 97 were constructed, and Buildings 12 and 13 were reconstructed after an explosion. Perhaps the most prominent of the buildings constructed as part of this national program was Building 42. Constructed at a cost of \$3 million, the five-story, 188,000 square feet Building 42 a capacity for more than 1,200 employees and nearly doubled the amount of office space on the Main Plant campus (3M January 1950:22). Building 45 was constructed as a compressor room. Building 49 was built to serve as an abrasives manufacturing facility. Buildings 96 and 97 were constructed as additions to the Herzog complex and respectively housed an assembly shop and a boiler room.

Between 1951 and 1953, 3M also acquired the Paper Calmenson Co. property located east of Forest and south of the CStPM&O tracks. In 1953, demolished the buildings on

this property and broke ground on Building 47. When completed two years later in 1955, when Building 47 opened, it was the largest abrasives manufacturing plant in the world (Milburn 2006:33). This large building, which was constructed along the south side of the CStPM&O, encompassed most of the block bounded by Phalen Boulevard between Forest Street North and North Earl Streets.

The end of the expansion and construction boom on the 3M Main Plant campus concluded with the acquisition of Building 41 in 1956 and the construction of Building 98 between 1957 and 1958. Building 41 was constructed as a bank circa 1949 on the triangular shaped lot at the northeast corner of Mendota and 7th Streets was acquired by 3M circa 1956 and became known as Building 41. While a bank was retained in a portion of the two-story, Moderne style building for several decades, the remainder of the spaced was used by 3M to house administrative offices (Buildings Consulting Group, Inc. 2009). Building 98 was constructed from 1957-1958 as a machine shop and office addition to the Herzog complex that is now known as the Building 99 complex. The two-story Building 98 housed a machinery shop on the first floor and office space on the second floor. This building marked the last structure to be constructed on the 3M Main Plant campus as part of the post-war expansion.

3M Center

In 1953, 3M broke ground on its new corporate campus, known as 3M Center, on a 325-acre site in Maplewood, Minnesota, several miles east of the 3M Main Plant. In 1955, the Central Research Laboratory moved into the first completed building, Building 201, at the new 3M Center facility (3M 2002:180). Although, research and production of new products started to occur at the new 3M Center, the importance of the Main Plant campus to 3M is evidenced by the fact that the company continued to heavily invest in the continued growth and development of the Main Plant campus while it was slowly starting to develop a the 3M Center in Maplewood, Minnesota. Moreover, the construction of Building 42 to house additional space for the corporate headquarters shows that the Main Plant was still the place most closely associated with the company's growth and development through the late 1950s. This investment in the Main Plant campus demonstrates the continued interested in maintaining it as a key administrative, manufacturing, and maintenance facility and that the 3M Center campus was oriented towards additional growth and development of the company on an international scale.

Continued Development of the 3M Main Plant

The look of the 3M Main Plant campus continued to change during the 1960s and early 1970s, as 3M demolished many dwellings and some small commercial buildings around the perimeter of the plant, mostly along 7th Street East and Bush Avenue to make way for parking for 3M employees (City of St. Paul 1963: #15536, 1965: #50010-50012, 1971: #129700). In 1964, Building 91 was constructed at the northeast end of the facility as machine shops. And as recently as 1990, 3M constructed Building 99 at the Main Plant campus.

Significance: The 3M Corporation is recognized throughout the U.S. and around the world for the many innovative products it has developed during its history and for a

number of influential business innovations. Consequently, it is not one specific event that makes the 3M Main Plant significant, rather it is a pattern or series of events throughout its history which has resulted in several significant contributions to broad patterns of history and the developmental history of the nation in the areas of commerce, industry, and invention. After its move to St. Paul from the north shore of Lake Superior, the company placed a strong emphasis on research and development, quality control, responsiveness to the needs of the manufacturing industry, and innovative sales and management techniques. These efforts, which were pioneering for their day, resulted in the development of countless products and business practices that augmented 3M's status as a corporate leader on the national and international scale.

The 3M Corporation was a trendsetter in the U.S. for its marketing, sales, and laboratory testing techniques. The company is significant for its innovations in these fields. Soon after the move to St. Paul, the sales division of 3M, led by manager William McKnight, focused on one-on-one contact with clients, an innovation in marketing at the time. This one-on-one client contact enabled the company to collect input on its products, develop an understanding of the needs of its clients, and to focus on developing products that would best meet the needs of its clients; in turn, giving 3M a competitive advantage over its competitors. This input, much of which early on was regarding deficiencies of 3M products directly led to the establishment of the first testing laboratory in Building 1. This lab provided the company a means to maintain quality control, which was almost unheard of during this time. Product testing ensured that 3M was providing consumers with a quality product, which provided the company a means for gaining additional business over competitors who did not have quality control processes. This emphasis on providing quality products also led to a company-wide focus on research and development. An immediate result was 3M's first "exclusive" product, "THREE-M-ITE" abrasive cloth, which became a best-seller with auto makers and repair shops and thrust 3M's products into the national market (3M 2009).

Based on these innovative business practices and the development of quality products that meet the needs of consumers, 3M was able to transform itself from a heavily debt-laden company on the brink of going out of business into a growing and profitable company in a matter of years. 3M was also strategic about buying the rights to products and acquiring its competition. In 1921, 3M bought the rights to "WETORDRY" waterproof sandpaper, the product which revolutionized the industry and allowed the company to quadruple its earnings and launch itself into the international market (3M 2009). During the same decade, while testing abrasive samples, lab assistant Richard Drew came up with the idea that would help painters mask car parts. The "SCOTCH" brand masking tape line was born and, along with several other products that were developed to aid the automobile industry, initiated a growth in the emphasis on product diversification (3M 2009). By the end of the decade 3M, along with eight other abrasives manufacturers, formed a holding company in Europe; the venture was 3M's first international business and created an opportunity for further growth and development.

The growth and continued development of products during this period had a direct impact on the expansion of the 3M Main Plant campus. As innovative new products were

developed on the campus, demand for 3M products grew and, as a result, existing buildings were expanded and new ones were constructed on the campus. The company ended the 1920s with sales figures four times higher than they were at the beginning of the decade (3M 2009).

The ascension of William McKnight to president of the company in 1929 marked another period of growth and development of both 3M and the 3M Main Plant campus. The ensuing decade, known as 3M's "golden era of research" (Huck 1955:180). 3M managed to escape the hardships that faced other companies during the Great Depression because of McKnight's wise business decisions and sound fiscal policies (3M 2009). 3M strategically acquired their only Midwest competitor in 1929 and purchased another, the Baeder-Adamson Company of Philadelphia in 1930. This, along with heavy investment in research and further product testing and development, continued the growth and diversification of the company. New products, such as "SCOTCH" Brand cellophane tape and "COLORQUARTZ" roofing granules, were introduced to the market. During the 1930s a large facilities expansion and research program, which included a new Central Research Laboratory, was undertaken on the Main Plant campus. While 3M started to build and acquire satellite factories around the country, the corporate headquarters, research and development, and the majority of 3M's employees were at the 3M Main Plant campus.

The 3M Corporation steadily grew through each decade with new innovations and inventions entering the national market. With the slowed automobile production during World War II, 3M was forced to look for new customers and markets for their products. The company also developed products which would aid in the war effort but used little raw materials. One such innovation was "SAFETY-WALK" Brand non-slip sheeting. The sheeting was used on ship decks, airplane wings, and other slick surfaces. "SCOTCHLITE" brand reflective sheeting was also heavily used in the war effort. These products, which were produced at the 3M Main Plant, made significant contributions to the nation's war efforts during World War II. The importance of 3M products protecting the nation during the war effort is demonstrated by the fact that 3M added 2,000 employees to its workforce at the Main Plant campus during the war, increasing from 3,300 employees in 1941 to almost 5,300 in 1943.

While 3M moved its Central Research Laboratory from the Main Plant campus to downtown St. Paul during World War II, this was a reflection of needing more space and not being able to expand due to wartime restrictions on building materials, than it was a lack of importance of the campus to 3M. To the contrary, 3M clearly demonstrated the importance of the Main Plant campus to the company in the decade and a half after the war, when the company made significant investments in the growth and development of the Main Plant campus. During a period between 1945 and 1958, 3M bought a significant amount of land and a number of buildings around the Main Plant campus, constructed more than a dozen new buildings on the campus to increase manufacturing capacity, provide additional office space for the company's corporate headquarters, and to develop a maintenance facility that served both the needs of the Main Plant and of other satellite facilities around St. Paul. During this period the size of the campus grew

nearly fivefold from a little under eight acres prior to World War II, to over 40 acres in the late 1950s.

This period of growth on the Main Plant campus was fueled by many innovations which led 3M to grow almost exponentially during this period. 3M's innovative product development and company growth continued in the 1950s. "SCOTCH" Brand filament tape, the "THERMO-FAX" copying process, "SCOTCH" Brand sound-recording tape, "SCOTCHGARD" fabric protector, and "SCOTCH-BRITE" scouring pads are among the many products developed during this era. In addition, the 3M patent of a red reflective sheeting that was visible at night resulted in the proposition of red STOP signs as the national standard in 1953 (Huck 1955:226). As demand for these products grew, additional buildings were constructed on the Main Plant campus to manufacture these products.

In 1951, 3M established its International Division and facilities were opened in Australia, Brazil, Canada, France, Germany, Mexico, and the United Kingdom (3M 2009). By the end of the decade, total sales of 3M products exceeded \$500 million. In 1953, 3M broke ground on a new corporate campus in Maplewood, Minnesota. Known as the 3M Center, the new campus was established to allow for further growth of the company. The 325-acre site also provided the company with space, something that was not available on the Main Plant campus without acquisition and demolition of adjacent properties.

Although the rapid expansion of the Main Plant campus after World War II continued through the mid-1950s, expansion of the campus tapered off in the late 1950s, and was substantially over in 1958, when the last building was constructed as part of this boom and the company focused its expansion efforts in the St. Paul area on the 3M Center site in Maplewood, Minnesota.

For a property like the 3M Main Plant campus that has remained in its historic use and maintained a clear association with its historic owner from which it has derived its significance, a number of factors must be considered when determining a period of significance for the property. The National Register Criteria for Evaluation exclude properties that have achieved significance in the last 50 years unless they are of exceptional significance. In instances where the period of significance for a property begins more than 50 years ago, any significance that has been achieved within the last fifty years must be of exceptional significance in order to be included in the period of significance. This means a period of significance should not extend past 1959, the 50 year cutoff point, unless significance achieved after this date was exceptional. Also, given the continuous association of the 3M Main Plant with 3M, the continuous process of innovation that took place on the campus, and the almost continual growth and expansion of the campus from 1910 onward, at least through the late 1950s, the period of significance for the 3M Main Plant is continuous.

The period of significance for the 3M Main Plant campus clearly begins in 1910, corresponding with the move of 3M St. Paul and the opening of Building 1. However, there are several key events in the history of the 3M Main Plant that were considered when determining an ending date for the period of significance. First, during World War

II 3M was forced to move its Central Research Laboratory to leased space in downtown St. Paul because it was running out of space on the Main Plant campus and was unable to construct new buildings on the campus due to the unavailability of building materials. This ended the era of technological innovation at the 3M Main Plant. The development of 3M Center in Maplewood is another factor. Although ground was broken for the 3M Center in 1953, the first building was not completed until 1955, and no significant functions were moved from the Main Plant to 3M Center until 1962, when the corporate headquarters was relocated. Therefore, business innovations continued to occur at the 3M Main Plant campus through 1962. In terms of the physical development, the 3M Main Plant experienced almost continuous growth and expansion from 1910 through the late 1950s, before it tapered off as the 3M Center was developed. Between 1945 and 1958, the size of the 3M Main Plant campus grew significantly. The overall land area of the campus increased nearly fivefold and more than a dozen buildings were constructed or expanded during this period. Although a few buildings were constructed or expanded after 1958, it was not a regular occurrence as most efforts by 3M to expand in St. Paul after this time were focused on the 3M Center in Maplewood. Consequently, the post-World War II building boom on the 3M Main Plant campus represents the last major building initiative at the 3M Main Plant.

When the Central Research Laboratory was moved off of the Main Plant campus during World War II, development of technological innovations at the Main Plant ended. However, this move reflects the inability to grow the 3M Main Plant due to a lack of building materials during the war, rather than on any diminished significance of the Main Plant to 3M. Moreover, business innovations continued to occur at the Main Plant for nearly two more decades and 3M heavily invested in the 3M Main Plant after the war, reflecting the ongoing significance of the 3M Main Plant to the growth and development of 3M after World War II. Therefore, the significance of the 3M Main Plant does not end with the move of Central Research Library off of the 3M Main Plant campus.

While the initial development of 3M Center foreshadowed a future reduction of the significance of the 3M Main Plant to 3M, it was not until 1962, when the corporate headquarters were relocated from the 3M Main Plant to 3M Center that the management of the growth and development of the company, as well as the development of business innovations ended at the 3M Main Plant. Since this move occurred less than 50 years ago, any significance associated with the corporate headquarters between 1959 and 1962 would need to be exceptional in order to extend the period of significance for the 3M Main Plant past 1959. 3M does not appear to have developed any business innovations at the 3M Main Plant between 1959 and 1962 that are of exceptional significance that would justify extending the period of significance past 1959.

As previously noted, in terms of growth and development, the 3M Main Plant campus was continually growing and evolving, corresponding with the growth and diversification of 3M, from 1910 through to the present day. However, the growth and development of the 3M Main Plant campus substantially ended in 1958, when the last building associated with the post World War II expansion of the campus was constructed. During this postwar period, which extends from 1945 through 1958, the land area of the 3M Main

Plant grew nearly fivefold and more than a dozen buildings were constructed on the campus. After this major building effort, a few buildings were constructed or expanded on the campus; however, expansion of 3M facility in St. Paul after 1958 were focused on the 3M Center in nearby Maplewood, thereby signaling the end of the significance of the 3M Main Plant to the overall growth of 3M, both locally and nationally.

Given all of these factors, the recommended ending date for the period of significance for the 3M Main Plant campus is 1958, corresponding with the construction of the last building constructed on the campus as part of the major post World War II expansion of the campus and the end of significant innovations at the 3M Main Plant that occurred more than 50 years ago.

In summary, the 3M Main Plant is the location where 3M grew from a struggling, debt-laden company on the brink of going out of business, into a major, national and international corporation that is recognized throughout the U.S. and around the world for the many innovative products it has developed during its history and for a number of influential business innovations. Through a strong emphasis on research and development, quality control, responsiveness to the needs of the manufacturing industry, and innovative sales and management techniques, all of which occurred on this site, 3M made significant contributions to broad patterns of history and the developmental history of the nation in the areas of commerce, industry, and invention. These efforts, which were pioneering for their day, resulted in the development of countless products and business practices that augmented 3M's status as a corporate leader on the national and international scale. The period of 1910 to 1958 represents the period of time in which 3M rose to national and international importance and became a leader in industrial research, development, and quality control with products such as: "WETORDRY" waterproof sandpaper; "SCOTCH" Brand cellophane tape; "SCOTCHLITE" Brand reflective sheeting; and "SCOTCHGARD" fabric protector. It was the development of these products which augmented 3M's status as a corporate leader on a national and, eventually, international scale.

Integrity: Part of the historic character of the 3M Main Plant campus was ongoing change as the campus grew and evolved over time, reflecting the continued growth, and diversification of the company. During the period of significance, the campus grew from one building that occupied a couple of lots into a large, multi-acre campus with numerous building, roads, parking lots, and railroad spurs spread across several city blocks. Because of the continued growth and evolution of the campus over a span of nearly 50 years, it is difficult to assess the integrity of any one aspect of the campus because the campus and its features changed considerably between 1910 and 1958; however 1958 is the date that most fully embodies the highest evolution of the campus. Assessing the integrity of the campus is somewhat complicated by the fact that 3M had an ongoing association with the campus until 2009; therefore, changes that occurred after 1958 could in the future be considered significant as part of the ongoing association with the 3M Main Plant with modern-day company. However, for the purpose of this evaluation, 1958 is the benchmark against which the integrity of the campus has been assessed.

After 1958, 3M constructed additions on to several buildings, the most prominent of which include additions to Building 42 and the Building 99 complex. 3M has also demolished several buildings, including Buildings 47, as well as Buildings 22, 23, 26 and 51, which located between the railroad tracks and Building 24, and Buildings 7, 8, 11 and 112, which were a series of very small buildings located north of Building 20. 3M also modified buildings over time to allow them to remain in their historic use. Some of the most obvious modifications include the replacement of windows on some buildings, and the covering of two elevations of Building 2 with stucco. Despite these changes, which again, could possibly be considered historically significant in the future, the overall integrity of the 3M Main Plant campus is generally good, although the level of integrity varies throughout the campus.

The 3M Main Plant is still located in its historic location and therefore has excellent integrity of location.

In general, the 3M Main Plant exhibits good overall integrity of design. The overall layout of the 3M Main Plant is intact, including the street grid, railroad corridors, and building clusters. The locations of most of the buildings that are non-extant are reinforced by grassy areas set between the street grid. In terms of architectural design, the integrity of architectural design is somewhat less important for a property such as the 3M Main Plant, which primarily derives its significance from its association with broad patterns of history. Moreover, most buildings on the campus were utilitarian in design and lack unique design features that are integral to conveying the historic significance of the property. Nevertheless, the utilitarian buildings on the campus do exhibit generally good integrity of design. While some buildings have lost their historic windows, they are still able to convey that they were industrial buildings. Buildings that do have unique architectural features, such as Building 21, retain their integrity of design.

In terms of setting, the overall of integrity of in and around the 3M Main Plant is generally good. The integrity of the setting in which the 3M Main Plant is located is generally good. The topographic features in and around the 3M Main Plant are relatively unchanged as are the vegetative patterns. Manmade features area, such as the street grid and rail lines are also intact. There transportation corridor that historically bisected the site remains, and although Phalen Boulevard has been constructed along it, this corridor the still conveys the feeling of a transportation corridor, which why the 3M originally located on this sites, and therefore, does not significantly change the historic setting of the campus. In addition, the setting around the 3M Main Plant, which includes a residential area to the south and industrial areas to the north, east and west intact. The parking areas around the perimeter of the 3M Main Plant, which are a contributing feature to the campus, remain and help created a setting of dense industrial complex that is a destination. Within the 3M Main Plant, the relationship of buildings is excellent through the core of the campus and is generally good on the potions of the plant north of Phalen Boulevard. The relationship of buildings where buildings have been demolished varies. On the eastern end of the 3M Main Plant, the setting of the district has been somewhat compromised by the loss of Building 47; however, this area still retains a direct visual connection between the buildings on the north and south side of the

CStPM&O / Phalen Boulevard corridor. In terms of the relationship of buildings, the integrity of setting of the area setting bounded by Building 24, Building 20, the CStPM&O tracks and the Arcade Street between is compromised, however views of this area are limited and the relationship of buildings is strongly reinforced by the extant buildings facing Bush and Mendota.

The material integrity of the 3M Main Plant is generally good. The buildings, that area part of the 3M Main Plant retain the majority of their historic materials and reflect the preferences of those who created them. Materials that were designed to be replaced, such as roofing materials, are not character defining features and their replacement does not compromise the overall integrity of the building, rather it has allow for the retention of significant historic materials. The only notable instance where a significant historic material has been changed is where glass has been replaced with Kalwall in windows on some buildings; however, this does not have any significant bearing on the otherwise good overall material integrity of the district.

The buildings and structures retain the integrity of the workmanship that went in to their construction. While there are relatively few significant architectural or engineering features found on the buildings in the 3M Main Plant that exhibit the distinctive skill and labor of artisans, the majority of which are found on Building 21, those that exist retain their integrity of workmanship.

The integrity of feeling varies. Throughout the core of the 3M Main Plant, the integrity of feeling is very good, however, it is somewhat compromised in the areas where buildings have been demolished and where others have been expanded. However, the campus still retains a sufficient number of buildings, road, parking lots, and other features to convey the feeling of a cohesive campus. While the addition and loss of buildings has somewhat affected the campus in various ways, many of these events occurred during the period of significance and are part of the ongoing significance of the campus, which is characterized by the fact that industrial facilities are generally designed and planned to evolve with new technological developments and needs, which is what happened on this campus. Those that occurred after the period of significance have been somewhat minimized by being in less visible locations, so as not to compromise the overall feeling of a large industrial complex. While the loss of Building 47 has somewhat compromised the feeling of the area on which it stood, the area on front of this building was a large parking lot that provided a clear view the core of the campus and served as a gateway to it. This open space still exists, and continues to serve as a gateway to the 3M Main Plant and provide unobstructed views of the core of the campus, and therefore continues retain sufficient integrity of feeling to contribute to the overall feeling and setting of the 3M Main Plant. However, at the opposite end of the 3M Main Plant, the loss of the buildings and structures west of the Arcade Street overpass have compromised the feeling of the area west of the overpass to convey its feeling as an industrial facility. Moreover, the overpass serves as a visual barrier between the heart of the 3M Main Plant campus and the area west of the overpass, thereby preventing the area west of the overpass from being able to convey the feeling of being part of the 3M Main Plant. Therefore, the portion of

the 3M Main Plant located west of Arcade Street does not have sufficient historic integrity to convey its historic significance and that of the larger 3M Main Plant campus.

The 3M Main Plant is the location where 3M evolved into a national and international leader in the development, manufacture, marketing, and distribution of goods that have had significant and lasting impacts on the development of the U.S. It is the location where 3M pioneered many innovations in industrial research and development, including consumer feedback, product testing, and quality control were developed and perfected. It is also the location where many innovative products, such as “WETORDRY” waterproof sandpaper, “SCOTCH” brand cellophane tapes, “SCOTCHLITE” brand reflective sheeting and dozens of others, were developed, products were tested, and manufactured. The 3M Main Plant retains a sufficient level of physical integrity to convey these associations. Moreover, 3M still owns substantial portions of the 3M Main Plant, thereby reinforcing this association. For these reasons, the 3M Main Plant retains its integrity of association with 3M and the innovations that took place on the campus.

In summary, as a district, the 3M Main Plant generally exhibits good overall integrity although the level of various aspects of integrity varies somewhat throughout the district. It is able to convey the feeling of an overall cohesive campus, as well as its associations with 3M and the significant innovations and products that were developed on the campus between 1910 and 1958. The area west of Arcade Street, however, does not have sufficient integrity to convey its historic significance.

Recommendation: The 3M Main Plant Historic District has been previously determined eligible for listing on the NRHP under Criterion A. However, not all of the properties associated with the plant were evaluated, the level of significance and the areas in which the district are significant were never defined, changes have occurred to the campus since the former studies, and the period of significance was cutoff at the arbitrary 50 year mark. As such, the 106 Group re-evaluated the district, as well as all properties associated with the 3M Main Plant. Based on this re-evaluation, the 106 Group recommends the 3M Main Plant campus as eligible for listing in the NRHP as a historic district for its national significance under Criterion A in the areas of commerce, industry, and invention for its association with the rise of 3M into a national and international leader in the development, manufacture, marketing, and distribution of goods that have had significant and lasting impacts on the development of the U.S. The 3M Main Plant was the place where 3M rose to national and international importance and became a leader in industrial research, development, and quality control. The 106 Group recommends revising the period of significance to span the years 1910 – 1958, to correspond with the construction of the first building on the campus, Building 1, and the construction of Building 98, which was the last building to be constructed as part of the major post World War II expansion of the plant, after which 3M focused future expansion efforts in St. Paul on 3M Center in Maplewood, Minnesota. The 106 Group recommends increasing the boundaries for the historic district to include those areas of the 3M Main Plant that were developed between 1910 and 1958 which have sufficient integrity to convey their historic significance. This includes all property, except for the area west of Arcade Street, that was part of the 3M Main Plant in 1958 (Figure 32). Of the 26 extant buildings, two

structures (the water tower and pump house, and the CStPM&O railway), and one site (former site of Building 47) within the recommended boundaries of the district, 24 buildings, two structures, and one site are recommended as contributing to the district and two buildings, Buildings 84 and 85, are recommended as non-contributing (Table 3).

TABLE 3. 3M BUILDINGS, MAIN PLANT HISTORIC DISTRICT, ST. PAUL

Inventory Number	Name	Location/Address	Property Type	NRHP Status
RA-SPC-0449	3M Main Plant Historic District	Roughly bounded on the south by Minnehaha Ave. E.; on the southeast by 7 th St. E.; on the east by Earl St. N.; on the north by York Ave. and the CStPM&O; and on the west by Forest St. N., Weide St. and Arcade St.	District	Eligible
RA-SPC-0450	Building 1	West of Forest St. N., south of Phalen Blvd.	Building	Eligible, contributes to district
RA-SPC-8001	Building 2	NW corner of Forest St. N. & Bush/Fauquier Ave.	Building	Eligible, contributes to district
RA-SPC-0451	Building 3	West of Forest St. N., south of Phalen Blvd.	Building	Eligible, contributes to district
RA-SPC-8002	Building 4	West of Forest St. N., south of Phalen Blvd.	Building	Eligible, contributes to district
RA-SPC-8003	Building 14	North of Bush/Fauquier Ave.	Building	Eligible, contributes to district
RA-SPC-8004	Building 20	NE corner of Bush/Fauquier Ave. & Mendota St.	Building	Eligible, contributes to district
RA-SPC-0455	Building 21	900 Bush Ave.	Building	Eligible, contributes to district
RA-SPC-0454	Building 24	751 Mendota St.	Building	Eligible, contributes to district
RA-SPC-8005	Building 27	886 Minnehaha Ave. E.	Building	Eligible, contributes to district
RA-SPC-8006	Building 28	Alley south of Minnehaha Ave. E.	Building	Eligible, contributes to district
RA-SPC-8007	Building 30	888 Minnehaha Ave. E.	Building	Eligible, contributes to district
RA-SPC-8008	Building 40 (Water Tower and Pump House)	South of Reaney Ave., west of Mendota St.	Structure	Eligible, contributes to district
RA-SPC-8009	Building 41	879 E. 7 th St.	Building	Eligible, contributes to district
RA-SPC-8010	Building 42	East of Mendota St., north of Reaney Ave.	Building	Eligible, contributes to district
RA-SPC-8014	Building 45	East of Forest St., south of railroad tracks	Building	Eligible, contributes to district
N/A	Building 47 site	North of 7 th St. E., south of railroad tracks	Site	Eligible, contributes to district
RA-SPC-8011	Building 84	North of Phalen Blvd., east of Duchess St.	Building	Non-contributing to historic district

Inventory Number	Name	Location/Address	Property Type	NRHP Status
RA-SPC-8012	Building 85	North of Phalen Blvd., east of Duchess St.	Building	Non-contributing to historic district
RA-SPC-8013	Building 99 Complex (includes Buildings 80, 81, 82, 83, 91, 95, 96, 97, 98 and 99)	878 Duchess St.	Building	Eligible, contributes to district
RA-SPC-6065	StPS&TF / CStPM&O / C&NW / UP	N/A	Structure	Eligible, contributes to district

6.0 RECOMMENDATIONS

The 106 Group recommends that the previously determined eligible 3M Main Plant Historic District is still eligible for listing in the NRHP. The 106 Group recommends the 3M Main Plant Historic District as eligible for listing on the NRHP as a historic district for its national significance under Criterion A in the areas of commerce, industry, and invention for its association with the rise of 3M into a national and international leader in the development, manufacture, marketing, and distribution of goods that have had significant and lasting impacts on the development of the U.S. Through a strong emphasis on research and development, quality control, responsiveness to the needs of the manufacturing industry, and innovative sales and management techniques, all of which occurred on this site, 3M made significant contributions to broad patterns of history and the developmental history of the nation in the areas of commerce, industry, and invention. These efforts, which were pioneering for their day, resulted in the development of countless products and business practices that augmented 3M's status as a corporate leader on the national and international scale.

The 106 Group recommends revising the period of significance to span the years 1910 – 1958, to correspond with the construction of the first building on the campus, Building 1, and the construction of Building 98, which was the last building to be constructed as part of the major post World War II expansion of the plant, after which 3M focused future expansions efforts in St. Paul on 3M Center in Maplewood, Minnesota. The period of 1910 to 1958 represents the period of time in which 3M rose to national and international importance and became a leader in industrial research, development, and quality control with products such as: “WETORDRY” waterproof sandpaper; “SCOTCH” Brand cellophane tape; “SCOTCHLITE” Brand reflective sheeting; and “SCOTCHGARD” fabric protector. It was the development of these products which augmented 3M's status as a corporate leader on a national and, eventually, international scale.

The 106 Group recommends a boundary increase for the historic district to include those areas of the 3M Main Plant that were developed between 1910 and 1958 which have sufficient integrity to convey their historic significance. This includes all property that was part of the 3M Main Plant in 1958, except for the area west of Arcade Street which does not have sufficient integrity to convey its significance. The recommended revised boundaries for the 3M Main Plant Historic District are roughly bounded by: the south side of Minnehaha Avenue East on the south; 7th Street East on the southeast; North Earl Street on the east; York Avenue, Forest Street North, and Phalen Boulevard on the north; and Arcade Street on the west. The campus contains 26 extant buildings, two structures, and one site. The boundary runs southward along the east side of Arcade Street from the railroad tracks to the alley south of Reaney Avenue. At the alley, the boundary turns eastward and runs along the north side of the alley to Mendota Street, where it turns southward. It continues along the east side of Mendota Street, through the intersection with Minnehaha Avenue East, to the alley just south of Minnehaha, whereby it turns east. The boundary runs along the north side of the alley for approximately half of the block before turning to the north. It continues northward across Minnehaha Avenue East before

turning slightly northwest towards Seventh Street East. At Seventh Street East, the boundary turns northeastward and runs along the north side of the street. Just west of North Earl Street, the boundary turns again toward the northwest, crossing Phalen Boulevard before turning to the north. It extends northward to the south side of York Avenue, where it turns west, extending to Russell Street. At Russell Street, the boundary turns south, extending just beyond the cal-de-sac at the terminus of Russell Street before again turning west. The boundary continues westward to Duchess Street where it turns south and extends just south of Wells Street. It then turns again to the west and extends to Forest Street. The boundary runs southward along the east side of Forest Street until it meets Phalen Boulevard and the railroad tracks. At the railroad tracks, the boundary turns west, extending along the south side of the railroad tracks to Arcade Street (see Figure 32).

Of the 26 extant buildings, two structures, and one site within the recommended boundaries of the district, 24 buildings and the two structures and one site are recommended as contributing to the district and two buildings, Buildings 84 and 85, are recommended as non-contributing (see Table 3).

While the purpose of the Phase II architectural history survey was to re-evaluate the eligibility of the 3M Main Plant campus for listing on the NRHP, the 106 Group identified several properties during the survey that are potentially individually eligible for listing on the NRHP. Buildings 80, 81, and 83 which, in addition to being contributing buildings to the historic district, may be individually eligible for listing on the NRHP due to their association with the Herzog Iron Works Company. In addition to being contributing properties to the historic district, Buildings 1, 21, and 24 also appear to have potential individual significance and are potentially individually eligible for listing on the NRHP.

If there are likely to be adverse effects to the historic district, or to Buildings 80, 81 and/or 83, the 106 Group recommends that a Phase II evaluation be completed for Buildings 80, 81, and 83 to determine their potential for being individually eligible for listing on the NRHP based on their association with the Herzog Iron Works Company. In addition, if there are likely to be adverse effects to the historic district and specifically to Buildings 1, 21, and 24, the 106 Group recommends that Phase II evaluations be completed for Buildings 1, 21, and 24, to determine if they are individually eligible for listing on the NRHP.

REFERENCES CITED

106 Group Ltd., The

1994a *Burlington Northern Regional Trail, East Seventh Street to Lake Phalen, Cultural Resources Survey, Saint Paul, Minnesota.* On file at the Minnesota State Historic Preservation Office, St. Paul, Minnesota.

1994b *Burlington Northern Regional Trail, East Seventh Street to Lake Phalen, Cultural Resources Survey, Saint Paul, Minnesota, Minnesota Mining and Manufacturing (3M) Historic Structures Survey.* On file at the Minnesota State Historic Preservation Office, St. Paul, Minnesota.

Buildings Consulting Group, Inc.

2009 3M Building Reuse Data. On file at the St. Paul Port Authority, St. Paul, Minnesota.

Casey, Robert J. and W.A.S. Douglas

1948 *Pioneer Railroad: The Story of the Chicago and North Western System.* Whittlesey House, McGraw-Hill Book Company, Inc., New York, New York.

Chicago and North Western Historical Society

2004 *Chicago & North Western – A Capsule History.* Electronic document, http://www.cnwhs.org/ch_cnw.htm, accessed June 2009.

City of St. Paul

2009a Surveyor's Office: History. Electronic document.

<http://www.stpaul.gov/index.asp?NID=1013>. Accessed February 18, 2009.

2009b Wabasha Street Bridge: History and Background. Electronic document.

<http://www.stpaul.gov/index.asp?NID=862>. Accessed February 18, 2009.

2009c Ethnic Population Growth in St. Paul. Electronic document.

<http://www.stpaul.gov/index.asp?NID=2020>. Accessed February 18, 2009.

City of St. Paul Department of Parks, Playgrounds and Public Buildings – Division of Building Inspection (City of St. Paul)

1963 St. Paul Building Permits, #15536. On file at the Ramsey County Historical Society, St. Paul, Minnesota.

1965 St. Paul Building Permits, #50010-50012. On file at the Ramsey County Historical Society, St. Paul, Minnesota.

1971 St. Paul Building Permits, #129700. On file at the Ramsey County Historical Society, St. Paul, Minnesota.

Comfort, Mildred Houghton

1962 *William L. McKnight, Industrialist: A Biographical Sketch of the Chairman of the Board, Minnesota Mining and Manufacturing Company*. T. S. Dennison, Minneapolis, Minnesota.

Dobbs, C. A.

1989a *Outline of Historic Contexts for the Prehistoric Period (ca. 12,000 B.P. – A.D. 1700)*. Draft. Reports of Investigations No. 37. Institute for Minnesota Archaeology, Minneapolis. Submitted to the State Historic Preservation Office, Minnesota Historical Society, St. Paul.

1989b *Historic Context Outlines: The Contact Period Contexts (ca. 1630 A. D.-1820 A. D.)*. Draft. Reports of Investigations No. 39. Institute for Minnesota Archaeology, Minneapolis. Submitted to the State Historic Preservation Office, Minnesota Historical Society, St. Paul.

Dolence, Travis, K. Anne Ketz, Andrew J. Schmidt, and Judith E. Trent

1996 *Phalen Boulevard Phase I Cultural Resources Investigation for the Draft Environmental Impact Statement, City of St. Paul*. On file at the Minnesota State Historic Preservation Office, St. Paul, Minnesota.

Folsom, W.H.C.

1888 *Fifty Years in the Northwest*. Pioneer Press Company, St. Paul, Minnesota.

Hess, Jeffrey and Paul Clifford Larson

2006 *St. Paul's Architecture: A History*. University of Minnesota, Minneapolis, Minnesota.

Huck, Virginia

1955 *Brand of the Tartan: The 3M Story*. Appleton-Century-Crofts, Inc., New York, New York.

Ketz, K. Anne and Andrew J. Schmidt

1997 *Phalen Boulevard Phase II Cultural Resources Evaluations for the Draft Environmental Impact Statement, St. Paul, Minnesota*. On file at the State Historic Preservation Office, St. Paul, Minnesota.

Milburn, Curt

2006 *The Phalen Corridor: rebuilding the pride of the East Side of St. Paul*. East Side Neighborhood Development, St. Paul, Minnesota.

Minnesota Mining and Manufacturing (3M)

1941 *3M Megaphone*. Minnesota Mining and Manufacturing Company. On file at the Minnesota Historical Society, St. Paul, Minnesota.

- 1942 *3M Megaphone*. Minnesota Mining and Manufacturing Company. On file at the Minnesota Historical Society, St. Paul, Minnesota.
- 1943 *3M Megaphone*. Minnesota Mining and Manufacturing Company. On file at the Minnesota Historical Society, St. Paul, Minnesota.
- 1949 *3M Megaphone*. Minnesota Mining and Manufacturing Company. On file at the Minnesota Historical Society, St. Paul, Minnesota.
- 1950 *3M Megaphone*. Minnesota Mining and Manufacturing Company. On file at the Minnesota Historical Society, St. Paul, Minnesota.
- 1961 3M Company: An Inventory of its Corporate Records. Index for the Background, History, Division and International Subsidiaries Notebooks. Office Building Folder. On file at the Minnesota Historical Society, St. Paul, Minnesota.
- 1970 3M Company: An Inventory of its Corporate Records. Index for the Background, History, Division and International Subsidiaries Notebooks. Laboratories Folder. On file at the Minnesota Historical Society, St. Paul, Minnesota.
- 1977 *Our Story So Far: Notes from the First 75 Years of 3M Company*. Minnesota Mining and Manufacturing, St. Paul, Minnesota.
- 2002 *A Century of Innovation: The 3M Story*. Minnesota Mining and Manufacturing, St. Paul, Minnesota.
- 2009 Historical Timeline. Electronic document.
http://solutions.3m.com/wps/portal/3M/en_US/our/company/information/history/timeline/1910-profile/. Accessed February 20, 2009.
- Minnesota State Historic Preservation Office (SHPO)
- 1990 Urban Centers 1870-1940. Tier II: Post Contact Period Contexts (1837-1945). In *Preserving Minnesota: A Comprehensive Planning Process*. Minnesota State Historic Preservation Office, Minnesota Historical Society, St. Paul, Minnesota.
- 1993 Tier II: Post Contact Period Contexts (1837-1945). In *Preserving Minnesota: A Comprehensive Planning Process*. On file at the Minnesota State Historic Preservation Office, St. Paul, Minnesota.
- 2005 *SHPO Guidelines for History/Architecture Projects in Minnesota*. State Historic Preservation Office, St. Paul, Minnesota.
- Murray, Tom
- 2008 *Chicago & North Western Railway*. Voyageur Press, Minneapolis, Minnesota.

National Park Service

1983 Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. *Federal Register* 48(190):44716-44740.

1995 *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation*. Government Printing Office. Washington, D.C.

Prosser, Richard S.

1966 *Rails to the North Star, One Hundred years of railroad evolution in Minnesota*. Dillon Press, Minneapolis, Minnesota.

Sanborn Insurance Company

1885-1889 *Insurance Maps of Saint Paul, Minnesota*. Sanborn Map Company, New York, New York.

1903-1904 *Insurance Maps of Saint Paul, Minnesota*. Sanborn Map Company, New York, New York.

1926-1939 *Insurance Maps of Saint Paul, Minnesota*. Sanborn Map Company, New York, New York.

1926-1951 *Insurance Maps of Saint Paul, Minnesota*. Sanborn Map Company, New York, New York.

Thureen, Louise

1992 *Lake Superior Magazine*. *Birth of a giant: 3M's North Shore heritage* vol. 2, no. 3:38-43.

Upham, Warren

1920 *Minnesota Place Names*. Electronic document.
<http://mnplaces.mnhs.org/upham/city.cfm?PlaceNameID=2911&BookCodeID=6&County=62&SendingPage=Results.cfm>. Accessed February 18, 2009.

Writh, Kenneth M., Maj. Ray Miller, and Capt. Trevor Williams

1923 *Ramsey County Aerial Photographs*. Ramsey County, St. Paul, Minnesota.

Zellie, Carole and Garneth O. Peterson

2001a *Historic Context Study, Transportation Corridors: 1857-1950*. On file at the Minnesota State Historic Preservation Office, St. Paul, Minnesota.

2001b *Historic Context Study, Pioneer Houses: 1854-1880*. On file at the Minnesota State Historic Preservation Office, St. Paul, Minnesota.

2001c *Historic Context Study, Commercial Centers: 1874-1960*. On file at the Minnesota State Historic Preservation Office, St. Paul, Minnesota.

**APPENDIX A: MINNESOTA ARCHITECTURE-HISTORY INVENTORY
FORMS**

APPENDIX B: PROJECT PERSONNEL

LIST OF PERSONNEL

Project Manager	Anne Ketz, M.A., RPA
Project Coordinator	Nathan Moe, B.S.
Principal Investigator	Greg Mathis, M.C.R.P.
Field Historians	Miranda Van Vleet, M.H.P. Saleh Van Erem, M.S.
Graphics and GIS	Nathan Moe, B.S.