

Limestone Properties of Saint Paul's West Seventh Neighborhood Thematic Nomination

St. Paul Heritage Preservation Commission



(photo: T. Schroeder collection)

August 13, 2015
Heritage Preservation Commission Draft

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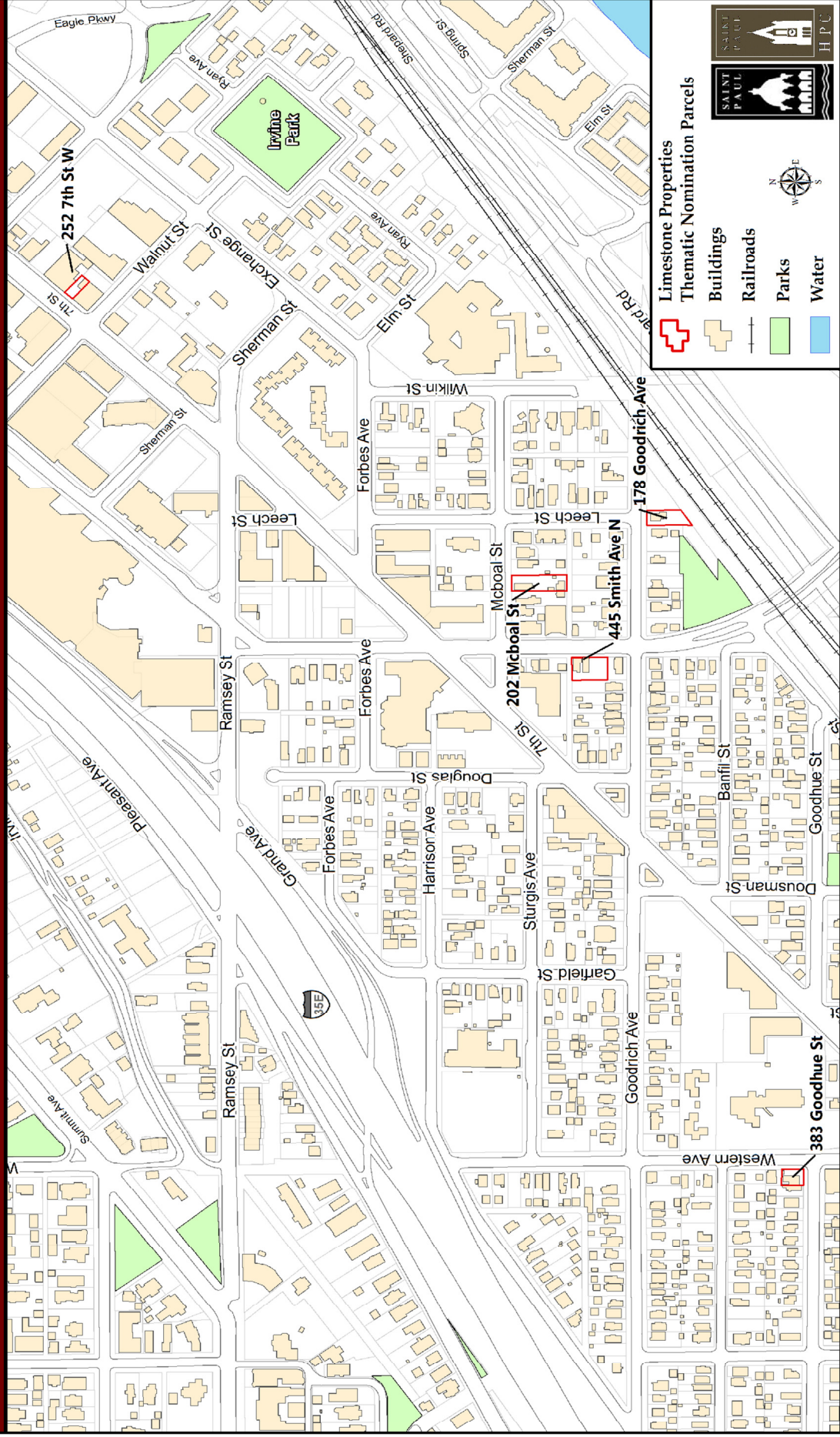
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Limestone Properties Thematic Nominations





Properties

1. Anthony Waldman House (445 Smith Avenue, # RA-SPC-3406);

Legal Description: Samuel Leeches Addition Ex S 60 Ft The Fol; Lot 14 & E 1/2 Of Lot 13 Blk 9

2. Christian Reinhardt House (383 Goodhue Street, # RA-SPC-8334);

Legal Description: Winslows Addition Ex N 50 Ft Lot 16 Blk 21

3. Justus Ramsey House (252 West Seventh Street, # RA-SPC-5296);

(former City Council Ordinances No. 16472, Oct. 26, 1978)

4. Martin Weber House (202 McBoal Street, # RA-SPC-4353); and

(former City Council Ordinances No. 94-1719, Jan. 7, 1995)

Legal Description: Samuel Leeches Addition Lot 4 Blk 8

5. Schillinger-Brings House (178 Goodrich Avenue, # RA-SPC-8341).

(former City Council Ordinances No. 16803, June 19, 1981,
No. 94-1720, Dec. 21, 1994)

Legal Description: Bernheimers Addition Vac Alley Accruing & Lot 3 Blk 1

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Limestone Properties Thematic Nomination
Part 1
Introduction and Significance

Introduction

The purpose of this nomination is to identify and designate Saint Paul's remaining resources constructed with the locally available limestone as the primary structural material. The resources are in the West Seventh Street neighborhood. The outcome will result in the preservation and celebration of these significant properties.

Part 1 of this thematic nomination identifies the associated local historic contexts that are most applicable for these property types and establishes the period of significance and local criteria that properties within this nomination meet.

Part 2 of this thematic nomination establishes a new historic context for vernacular-style houses built of Platteville limestone in the West Seventh Street neighborhood of Saint Paul between 1854 and 1880. The geographic parameters for this context are adopted from Mead & Hunt's 2011 reconnaissance survey, "Neighborhoods at the Edge of the Walking City," conducted for Historic Saint Paul, the Saint Paul Heritage Preservation Commission (HPC), and Ramsey County Historical Society, which defined the West Seventh Street neighborhood for survey purposes. The chronological parameters for this context are adopted from the 2001 HPC context study by Zellie & Peterson, who defined the period 1854-1880 as Saint Paul's "Pioneer Era." However, it should be noted that the *Neighborhoods at the Edge of the Walking City* consider the chronological parameters for this neighborhood to be 1849 to 1900 which covers the time that this neighborhood became fully developed.

Part 3 presents specific information on the five properties included in this nomination:

1. Anthony Waldman House (445 Smith Avenue, inventory # RA-SPC-3406);
2. Christian Reinhardt House (383 Goodhue Street, inventory # RA-SPC-8334);
3. Justus Ramsey House (252 West Seventh Street, inventory # RA-SPC-5296);
4. Martin Weber House (202 McBoal Street, inventory # RA-SPC-4353); and
5. Schillinger-Brings House (178 Goodrich Avenue, inventory # RA-SPC-8341).

The City Council has previously designated the Justus Ramsey House (1978), the Schillinger-Brings House (1981, 1994 after move), and the Martin Weber House (1995) as individual Saint Paul Heritage Preservation Sites. The Justus Ramsey House is also listed on the National Register of Historic Places (1975).

Part 4 provides the Preservation Program (Design Review Guidelines) that will govern the preservation of the properties following designation.

Designation Criteria

The St. Paul Legislative Code establishes seven criteria for the designation of heritage preservation sites (§73.05). The limestone properties collectively meet criteria 1, 4, and 7. But individually some of them are also representative of Criteria 3 and 5. Those are described individually in Part 3.

Designation Criterion 1 (§73.05(a)(1)) states that the Commission shall consider the following about the district:

Its character, interest or value as part of the development, heritage or cultural characteristics of the City of St. Paul, the State of Minnesota, or the United States.

(This statement is forthcoming)

Designation Criterion 4 (§73.05(a)(5)) states that the Commission shall consider the following about the district:

Its embodiment of distinguishing characteristics of an architectural or engineering type or specimen.

(This statement is forthcoming)

Designation Criterion 7 (§73.05(a)(7)) states that the Commission shall consider the following about the district:

Its unique location or singular physical characteristic representing an established familiar visual feature of a neighborhood, community, or City of St. Paul.

(This statement is forthcoming)

Period of Significance

The period of significance for the Limestone Thematic Nomination is from **1849** when Saint Paul was incorporated as a town and permanent housing construction increased, to **1900** when the Uppertown area was mostly developed. All five properties were constructed during the period of significance as well as early expansions that have gained significance in their own right and show how an area's uses and/or development patterns evolved.

Associated Contexts

Already established Saint Paul context studies that are applicable to the Limestone Properties Thematic Nomination are *Pioneer Houses: 1854-1880*, *Transportation Corridors: 1857-1950*, *Neighborhoods at the Edge of the Walking City: 1849-1900*. In addition, Greek Revival and Federal style buildings, and stone quarries of the West Seventh Street area and limestone construction contexts are included in Part 2 of this nomination.

Limestone quarrying, carving and construction were particularly prevalent in the West Seventh Street neighborhood during this era due to the accessibility of building-grade deposits and to the versatility and durability of limestone as a building material. The intensive use of limestone during the Pioneer Era helped shape the physical and cultural identity of the neighborhood, and the city's few surviving limestone residences comprise a particularly distinct set of historical resources.

Limestone plays a leading role in this nomination. Nevertheless, this context transcends limestone as material to explore the patterns in history which ultimately gave it

meaning and significance in the emerging city. The ready availability of limestone as a ubiquitous byproduct of city improvements, its early exploitation as a source of municipal revenue, the distinctive character its quarries gave the West Seventh Street neighborhood, the numerous skilled and unskilled trades and labor unions it spawned, and the cultural and ethnic associations it initially attracted, are all developed in this document. While this nomination focuses on vernacular-style houses, it is hoped that other types of resources built of limestone—including larger, architect-designed residences, and commercial and industrial structures and resources—will be explored as future amendments to this nomination.

Architectural Character

The development of Uppertown dates from the 1840's when John R. Irvine built a river landing near Chestnut Street. The Upper Landing became an important shipping center and point of arrival and much of the early development was organized around the Upper and Lower levees. The old Fort Road between Fort Snelling and St. Paul was the area's main artery. Irvine Park and the area to the west was a focus of early residential development and today contains the city's largest concentration of Greek Revival, Federal, Second Empire, and Italianate Styles. St. Paul had a building boom in the early 1850's and by 1858 Uppertown (1992 survey boundaries) contained 67 buildings. More than half were located in Leech's Addition. It is difficult to determine if some buildings were built solely for commercial uses at this time as often one or two rooms would be used in a residence as a place of business as well.

The first "permanent" frame and masonry dwellings came in the 1850's and many were modest one-story structures in Greek Revival and Federal styles. While simple in design, the limestone buildings share common architectural characteristics. Residences generally have a sidehall plan with hipped or front gabled, wood shingled roofs containing wide wood friezes and boxed eaves. If porches are present, they are simple in design with wood columns extending to the foundation and void of a balustrade. Fenestration is regular with rectangular openings framed by flush stone lintels and projecting stone sills which contain wood double-hung windows, often with many individual panes. Additions to the stone structures as well as accessory structures on the properties were often modest and constructed of wood. More modest buildings were built close together with several dwellings on one lot, while larger structures that came later were built on larger lots.

"Residential, commercial, and industrial land uses were largely mixed in early St. Paul but by the Civil War, as the rise of industrial capitalism gradually separated the workplace from the place of residence, especially for the upper classes" (Zellie, 2001, *Pioneer Houses*). Given the distance between the two landings, Lowertown became the major commercial center and Uppertown became primarily residential while Uppertown's business district was developing east of Irvine Park which became known as Seven Corners and spread west along Fort Road and West Seventh Street (Mead & Hunt, 2011, *Walking City*).

Limestone Properties Thematic Nomination
Part 2
Limestone Context

1. Limestone and its Early Sources

Limestone, the only structural stone naturally present in Ramsey County, provided a durable and fire-resistant building material for the emerging city during its Pioneer Era. Platteville Limestone is a formation of Upper Ordovician limestone and dolostone. It is tied to the Glenwood Shale formation of the same era which it overlays.

The Platteville Formation is as much as 30 feet (9 meters) thick where uneroded. It is composed of yellowish-gray to light brown-gray, thick- to medium-bedded dolostone overlying yellowish-gray to light gray, thin-bedded limestone.... These formations are exposed more or less continuously along the Mississippi River in Saint Paul and Minneapolis and a short distance up the Minnesota River. They also cap mesas in southern Washington County and eastern Dakota County. (Figure 1)¹

True limestones are comprised of pure calcium carbonate, whereas dolostones have nearly equal parts calcium carbonate and calcium magnesium carbonate (dolomite). Dolomitic limestones have some dolomite, but not enough to be considered dolostones. The Platteville Formation contains a mix of these. It is:

a gray, finely crystalline, thin-bedded, mottled dolomitic limestone about 11.5 feet thick. Thin, irregular shaly partings occur at intervals of ½ to 8 inches. Fossils are abundant and many occur in lenticular zones parallel to the bedding. The weathered rock, light chalky gray in color, is prominently mottled by small irregular patches of yellowish-brown limonitic stain due mainly to oxidation and hydration of ferrous iron present in the dolomitic parts of the rock.²

In the early settlement, wood was commonly available and the easiest method of constructing shelter. The need for more permanent, fire-resistant, and defensible structures pointed toward masonry, and the Platteville Limestone was abundant in Saint Paul, Fort Snelling, and the land in between. The nature of the stone—splitting easily along its horizontal partings but hard to shape across the grain—lends itself to rubble stone construction, which only needs to be flat on the top and bottom. Traditions of stone masonry, carried from the eastern US and directly from Europe, included rubble masonry as well as the ability to cut and dress stone to create more formal ashlar masonry. The mix of rubble and ashlar stone masonry and the distinctive wrinkled surface texture of Platteville Limestone creates an aesthetic that defines early stone buildings of Saint Paul.

¹ John H. Mossler, "Bedrock Geology of the Twin Cities Ten-County Metropolitan Area, Minnesota," 2013 (hereinafter "Mossler").

² Robert H. Griffin, "Dolomitic Mottling in the Platteville Limestone," *Journal of Sedimentary Petrology* 12(2): 67-76.

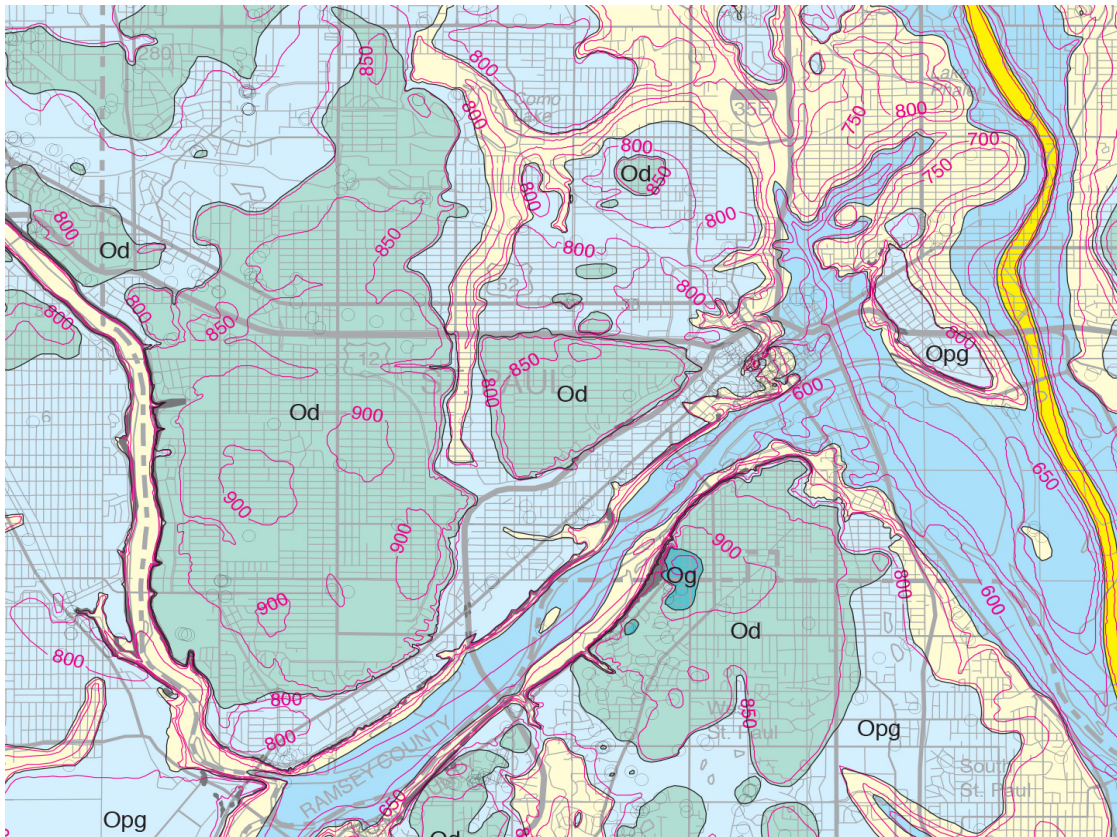


Figure 1: Bedrock geology around Saint Paul. The light blue (Opg) is the Platteville and Glenwood Formations.³

Large amounts of Platteville Limestone were easily available in Saint Paul in the 19th century. The excavation of basements and cellars, together with the city's perennial street gradings, produced piles of stone rubble everywhere. Describing the frenetic building season during the summer of 1857, historian J. Fletcher Williams wrote: "[A]n army of workmen and mechanics labored night and day to keep up with the demand for dwellings and stores. Another small army was engaged in grading streets, and laying gas pipes, the air being continually shaken with the concussion of blasting rock."⁴ Early photographs show piles of broken limestone stacked in backlots, front lots, over sidewalks or even in the middle of city streets. (Figure 2).

Much of the waste from street grading was rubble shale that was thinly layered, soft and easily flaked. Yellow-brown in complexion, this stone, if used at all for construction, was relegated to side and back walls, masonry in-fill, or the interior courses of walls that would be finish-plastered. The hard, gray-blue limestone best suited for cutting and carving came from lower strata, which 19th-century geologists called the Lower Trenton.⁵

³ Mossler (2013).

⁴ J. Fletcher Williams, *History of the City of Saint Paul to 1875* (1876; repr. Saint Paul: Minnesota Historical Society Press, 1983) (hereinafter "J. Fletcher Williams"), 376.

⁵ N.H. Winchell, *Geology of Minnesota*, Vol. I of the *Final Report* (Minneapolis: Johnson, Smith & HPC Draft, August 13, 2015



Figure 2. Waste shale and limestone piled in the street in front of a building facing Wabasha above 4th Street in 1857. B.F. Upton (Minnesota Historical Society, Reserve Album 56, no. 2).

By the mid-1850s, the city recognized the revenue-raising potential of the higher grade stone exposed by its numerous public projects, and began selling seasonal licenses to stone cutters and contractors to extract stone from quarries on municipal property and public right-of-ways. The location of these quarries constantly shifted as the city's street grading, sewer and gas trenching, or hill-leveling objectives were completed. Between 1858 and 1865, the largest quarries were located on Robert Street near Sixth Street, Ninth Street near Robert Street, Tenth Street near Minnesota Street, and along Bluff Street (now Cliff Street) in the Third Ward.⁶ Each month the City Engineer reported to the Common Council on the status of quarry licenses, the quantity of stone removed by each contractor and the charge per perch.⁷

Harrison, 1884) (hereinafter "Winchell, Geology of Minnesota"), p. 170.

⁶ See variously, *Proceedings of the Common Council of the City of Saint Paul, for the Year Ending 1858* (Saint Paul: Daily Minnesotan Print, 1858) (hereinafter "Proceedings"), pp. 48, 103, 118 and 133; 1860 at pp. 42 and 58; 1862 at pp. 3, 55.

⁷ The City charged 15 cents per perch of limestone removed. See, e.g., "Rinehart, Slick and Ard successors to [the license of] Frank Deck, contractors, [paid] \$11.40 [for] 76 perches [at] 15 cts per prch." *Proceedings, Report of City Engineer for Sept. 1, 1862* at 55. These same contractors were listed in the City Engineer's July report as having removed 42 perches of stone. (For scale, the combined 118 HPC Draft, August 13, 2015

As the city became more developed and land values near its core skyrocketed, quarry activity migrated outward to three principal areas: north of the capitol, where the firms of Breen and Young, M. Roche, and William Zollman operated; across the river in West Saint Paul, where William Dawson operated; and along West Seventh Street, where a number of independent quarrymen operated on smaller parcels scattered on either side of the “Fort Road Extension” running to the Fort Snelling ferry crossing.⁸

2. The West Seventh Street Quarry District

Much of the area of the original plat of Saint Paul sat atop St. Peter Sandstone. However, the land immediately to the west and southwest, stretching roughly from Seven Corners (the intersection of West Seventh Street, Eagle Street and today’s Kellogg Boulevard) to the Fort Snelling landing, lay upon a broad, flat layer of Platteville Limestone. (Figures 1 and 3). The erosive effects of the glacial Mississippi River left this area with the shallowest depth-to-bedrock readings of any part of the city—in many areas less than one foot.⁹ As the *Saint Paul Daily Globe* boasted:

The upper portion of [West Seventh] street is very fortunate in having on both sides of it inexhaustible quarries of blue limestone, so that all the building material required is close at hand, and all that is needed is to blast it out. The stone in these quarries is not surpassed by that of any other quarry of similar stone, and there is “millions in it.”¹⁰

As the *Globe* reported shortly after the Pioneer Era, the limestone quarries of the West Seventh Street neighborhood had contributed greatly to its economic development, helping to define the character of the community:

For years [West Seventh Street] has been, from the Seven corners up to the city limits, the most neglected and desolate street in the city. No one wanted to live upon it, and those who many years before through stress of circumstances had bought or built houses out there, were anxious to move somewhere else. It has been a desirable part of town to no one, and has been unusually, for years, regarded by all as a lonesome, deserted and wholly neglected part of the city.... To-day it presents to the eyes of the beholder the appearance of great business activity. On either side of it two immense quarries of blue limestone are being worked with great activity, from which large quantities of stone for the different structures along the street are being taken, while the shale and refuse rock are

perches taken by this contractor is the equivalent of a stack of stone 14 feet cubed. *Journal of the American Institute of Architects*, vol. 5, no. 2, p. 85 (February 1917), quoted in <http://www.sizes.com/units/perch.htm>) Other licensed contractors listed in these reports include J.B. Amidon, Alonzo Eaton, Jerome Roach, Michael D. O'Brien and numerous others.

⁸ Winchell, *Geology of Minnesota*, p.173; Warren Upham, *History of Mining and Quarrying in Minnesota, An Address at the Annual Meeting of the Minnesota Historical Society*, Jan. 18, 1897, p. 296; see also Part I(B), below.

⁹ *Minnesota Geologic Survey*, University of Minnesota County Atlas Series, Atlas C-7, Plate 5, Depth to Bedrock (J. Mossler and J. Cleland, 1992), at http://conservancy.umn.edu/bitstream/11299/58233/8/c7_05%5B1%5D.pdf

¹⁰ *Saint Paul Daily Globe* (hereinafter “Globe”), July 19, 1885, p. 5.

being utilized in macadamizing Banfil, Dousman and other streets that are being graded in that vicinity. This working of the quarries, and grading of the adjacent streets of itself gives an appearance of great activity to that whole stretch of country from Seven corners out to the Short Line crossing.¹¹

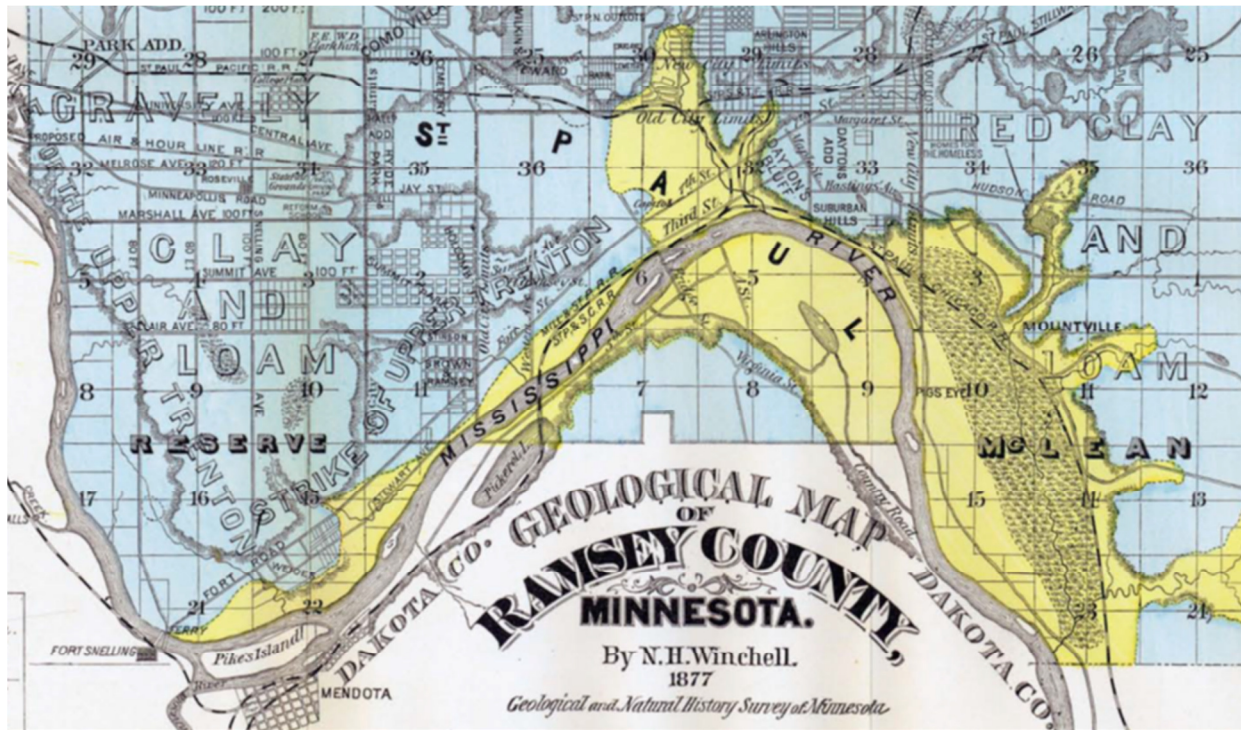


Figure 3. N.H. Winchell, *The Geologic and Natural History of Minnesota, Sixth Annual Report* (Minneapolis: Johnson, Smith & Harrison, 1878), Chapter V, inset map following p.66. The blue depicts the Upper Trenton (Galena shale) and Lower Trenton (Platteville limestone); the yellow indicates St. Peter sandstone.

Numerous lots in the West Seventh Street neighborhood were leased by their owners for quarrying, providing a ready source of income even prior to residential building development. Tall, wood, stiff-leg derricks, powered by hand-crank or steam engine, pivoted at the base to load wagons pulled by teams of horses. The derricks were maneuverable and could quickly extract large quantities of stone from even small city lots. (Figures 4 - 6) Given the thinness of the Platteville deposits in the area—generally ranging from 12-15 feet—few of these smaller quarries operated for more than a decade before their operators moved on to the next available site. Nevertheless, several West Seventh Street quarries had a scale and longevity sufficient to be documented in either the Sanborn Insurance Maps or in contemporary treatises on mining. These included quarries located:

- west of Douglas Avenue between Harrison and Sturgis Streets;¹²
- north of Goodhue Street midway between Richmond and Western Avenues;¹³

¹¹ *Globe*, May 11, 1884, p. 2.

¹² Sanborn Insurance Map, 1903-4, sheet 26.

- north of Banfil Street midway between West Seventh Street and Western Avenue;
- on the entire block northwest of West Seventh Street between Michigan Street and St. Clair Avenue;¹⁴
- south of St. Clair Avenue between Oneida and Webster Streets;¹⁵
- at the southwest corner of Colborne Street and St. Clair Avenue (see Figure 6); and
- on Bluff Street (today, Cliff Street) near the end of Leech Street.¹⁶

At separate locations, cutters and carvers worked in stone yards transforming the raw stone into usable building material. Given the weight and expense of transporting stone, it is not surprising that the city's center of stone carving was also the West Seventh Street neighborhood, not far from its quarries. Contemporary accounts estimate that between 100 and 150 stonecutters were employed in several stoneyards on the Upper Levee and Chestnut Street.¹⁷ The 1860 federal census identifies twenty "stonemasons" in the Fourth Ward alone (including the West Seventh Street neighborhood), surpassing any other ward in number. Of those, six were German, nine Irish, three English and one each of Prussian and Swiss descent. These men likely drew from a deep font of skill and tradition gained from European guilds and the melding of different nationalities, approaches and materials. By the end of the 19th century, when the industry was already on the decline, the *Saint Paul Globe* had dubbed the neighborhood the "West Seventh quarry district."¹⁸

Like most 19th century industries, quarrying and stone processing underwent considerable consolidation. By the 1890s, the firm of H. Von der Weyer quarried more than 25 acres of land at the far end of West Seventh Street across from Fort Snelling. Von der Weyer's operation was later purchased by stone contractor and quarryman Jacob Lauer in 1902.¹⁹ However, by this time, the blue limestone once considered prime building material had been largely consigned to the rock crusher for use in street construction.²⁰ One of the largest stone crushing plants in the Northwest began operations just west of the Schmidt Brewery in 1902.²¹ In contrast, the small neighborhood quarries of near-West Seventh Street had largely disappeared. Development pressures, rising land values, and possibly growing complaints from

¹³ Sanborn Insurance Map, 1885, sheet 40b

¹⁴ Sanborn Insurance Map, 1885, sheet 40b

¹⁵ Sanborn Insurance Map, 1903-4, sheet 77.

¹⁶ N. H. Winchell, State Geologist, *The Geological and Natural History Survey of Minnesota, Sixth Annual Report for the year 1877* (Minneapolis: Johnson, Smith and Harrison, 1878) (hereinafter "Winchell, *Sixth Annual Report*"), p. 90.

¹⁷ *Globe*, Apr. 11, 1886, p.11.

¹⁸ *E.g.*, *Globe*, Oct. 2, 1902, p. 10.

¹⁹ *Globe*, Dec. 16, 1904.

²⁰ Oliver Bowles, *The Structural and Ornamental Stones of Minnesota*, Bulletin 663, U.S. Geologic Survey (GPO: Washington, 1918), p. 185.

²¹ *Globe*, Oct. 2, 1902, p. 10.

neighbors²² resulted in the closing, filling and redevelopment²³ of all but two of the quarries east of Jefferson—and one of these was marked “abandoned” on the 1903-4 Sanborn Map.²⁴



Figure 4. “Stone quarry above lower Main Street, directly above Hersey Bean Sawmill, Stillwater.” Minnesota Historical Society, Catalog PUID: Runk 2414, IRN: 10093227, Neg. No.: Runk 2414.²⁵

²² One resident was awarded \$50 in judgment against one quarry operator for operating a stone quarry and stone crusher immediately adjacent to the plaintiff’s home “as to cause dust or smoke to be blown thereon or as to cause noises that disturb the occupants... from the blasting of rock.” *Globe*, July 25, 1897, p. 10.

²³ See, e.g., *Globe*, Aug. 2, 1903, p. 24 (Smith & Taylor realtors advertising “quarry lots in West Seventh District” at “enormous reductions from actual values, and upon easy terms of payment.”)

²⁴ 1903-4 Sanborn, Sheet 25 (on Banfil between Western and West 7th Street). The quarry on Douglas between Sturgis and Harrison remained operational, but was gone by the time of the 1926 Sanborn. The *Globe* advertised it for sale in 1901: “A1 stone quarry, West Seventh street district, east of Short Line, very conveniently located; good opening with sewer connection; best kind of stone; a good chance to make money in selling stone; will sell cheap and easy terms.”

²⁵ Winchell noted regarding this quarry: “The oldest quarry in this formation [of dolostones], in the state of Minnesota, is that of Dr. C. Carli, at Stillwater, now operated by Mr. Conkling, opened in 1847. It is near the northern limits of the city, at the top of the bluff of St. Croix lake. Since then several other quarries more favorably situated, have been opened and have furnished considerably more stone than that of Dr. Carli, viz. those of Hersey, Staples and Hall, and of Fayette Marsh. These were begun in 1854.” Winchell, *The Geology of Minnesota*, p. 159. See also *Saint Paul Daily Globe*, May 29, 1890, p. 7 (“Limestone—For sale, all grades of white limestone; none better in the state; bridge stone, engine bed stone and range rock a specialty. For prices, address C.H. Carli, Stillwater, Minn.”).



Figure 5. T.W. Ingersoll, Limestone Quarry, Saint Paul, between 1885 and 1890 (T. Schroeder collection).

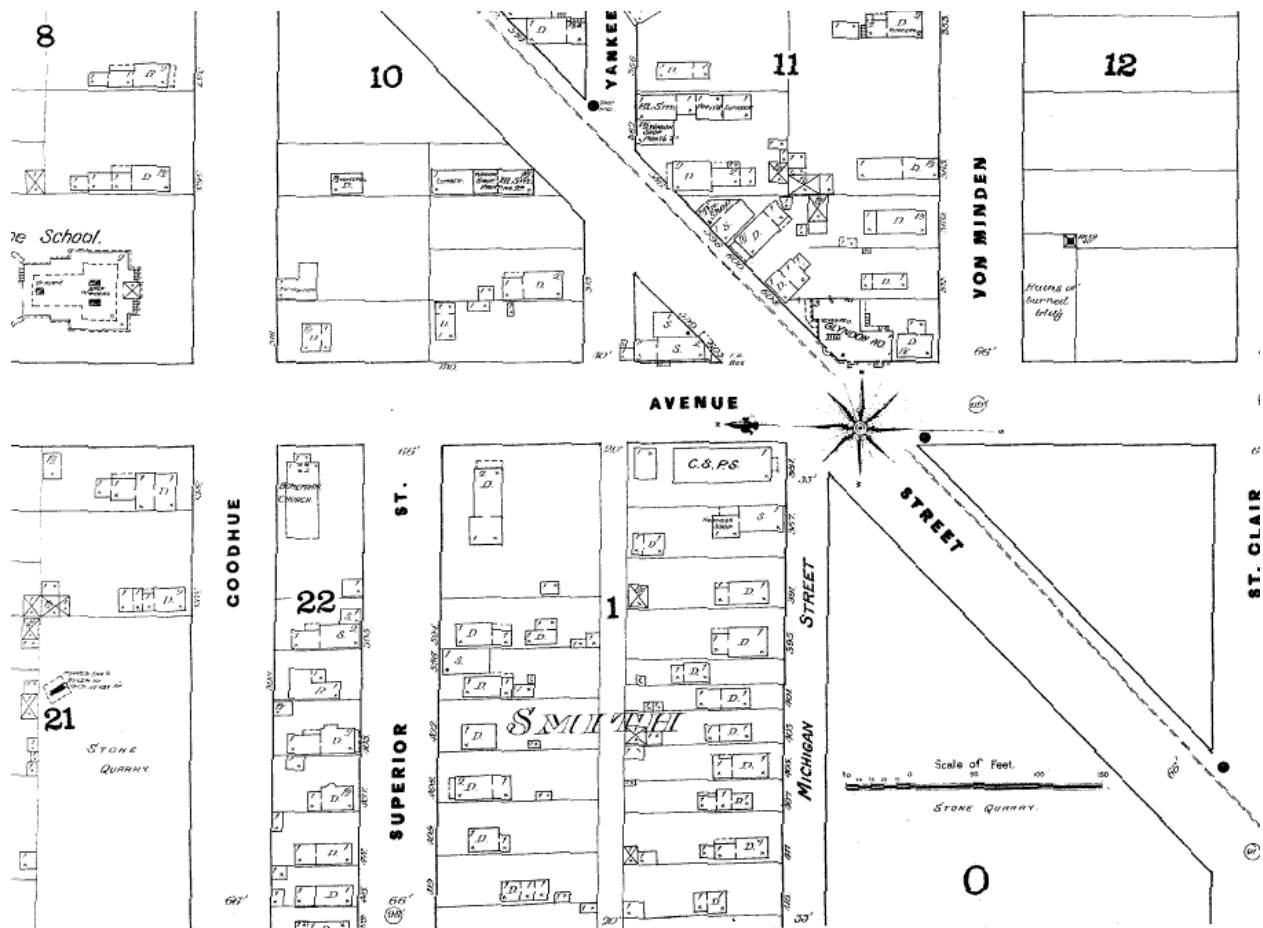


Figure 6. 1885 Sanborn Insurance Map showing limestone quarries on Goodhue (bottom left) and West Seventh Street (bottom right), the former operating with a steam-powered derrick. (Sheet 40a).

3. Mortar

Apart from limestone itself, the other essential ingredient for stone masonry is mortar, which is made from sand and binders. Chemical analysis of mortar samples taken from the Anthony Waldman House (445 Smith Avenue) show that the sand used for this structure was likely sourced from the Mississippi River. It was comprised chiefly of quartz, feldspar, lithic fragments, carbonates, and graywackes—all typical of local glacial deposits. There are two kinds of setting binders:²⁶ those that change by carbonation (lime); and those that change by hydration (hydraulic). Lime is produced by calcining (heating) limestone (calcium carbonate) or dolostone (calcium magnesium carbonate), and holding it at these temperatures for a day or more. This is commonly done with a kiln. The carbon dioxide and water bound within the carbonate is released, producing quicklime (calcium or calcium magnesium oxide). Quicklime can then be

²⁶ Non-setting binders do not change chemically after being placed. The most common is clay.

mixed (slaked) with water to make calcium (or calcium magnesium) hydroxide, also referred to as hydrated lime or lime putty depending upon its physical state. Hydraulic compounds are produced by heating argillaceous (clay-bearing) limestone or mixed limestone and clay in a kiln and fire them at very high temperatures. The “hydraulic potential” of the final product is determined, loosely, by the amount of clay and the temperature of the kiln. The resulting product is ground into a powder and sold as Natural Hydraulic Lime or cement,²⁷ depending on the hydraulic potential. The mason mixes lime, sand, and any cements to make mortar.²⁸ Historically, materials with high hydraulic potential (cements) were expensive to produce and use. The low levels of hydraulic potential in limes was rarely exploited, making most limes either air-limes (not hydraulic) or feebly hydraulic. Therefore, most mortars before the 20th century had few, if any hydraulic compounds.

Like stone and sand, lime is heavy and therefore costly to transport. Lime was generally sourced as close to masonry projects as possible during the Pioneer Era. Quicklime is the lightest, and therefore the easiest to transport, but reacts violently with water—which did not prevent lime from being shipped by water. A commercial-scale lime kiln operated on Grey Cloud Island as early as 1846, within easy shipping distance two miles downriver from Saint Paul.²⁹ Lime barges landed at the city’s levees almost daily throughout the 1860s.³⁰ Apart from transported lime, there is evidence that single-use lime kilns were sometimes constructed immediately adjacent to construction sites.³¹ For example, Saint Paul contractor John Gilman petitioned the Common Council in April of 1863 “to construct a lime kiln” on Selby Avenue.³²

4. Limestone masonry design and craft

Although the rough, weathered, and frequently fractured surface of most Pioneer Era limestone buildings give the impression of crude simplicity, their construction is anything but simple. Each stone was carefully placed to help maintain joint width, and to avoid aligned vertical joints. Traditional composite masonry walls had an inner wythe of stones, an outer wythe of stones, numerous tie stones that tied the two wythes together, a core consisting of smaller rubble stones, and enough mortar to make it all a solid mass. A simplified (and thinner) version would skip the rubble core. Window and door openings were planned in advance of construction and headers were formed either by broad, flat-lain lintel stones or by arches, sometimes with larger keystones. Lintels were

²⁷ A cement is considered natural if it is created from one quarry. It is considered artificial if it is created by blending raw materials. The most famous natural cements in the US came from argillaceous limestones quarried around Rosendale, NY. The most famous artificial cement is Portland cement.

²⁸ A lime mortar can also be made hydraulic by the addition of pozzolans when it is uncured. The Romans famously added volcanic sands from Pozzuoli to achieve this.

²⁹ See <http://www.nps.gov/miss/planyourvisit/greyisla.htm>; see also <http://projects.wchsmn.org/reference/sites/grey-cloud-lime-kiln/>

³⁰ See, e.g., *Proceedings*, July 1, 1862, p. 46. An average of 2-4 lime barges per week arrived at one of the City’s two landings.

³¹ *Proceedings*, April 10, 1863, p.99.

³² For an explanation of lime calcination methods, see <http://www.english-heritage.org.uk/publications/iha-preindustrial-lime-kilns/preindustriallimekilns.pdf>

frequently backed by square-hewn timber on the interior to provide extra tensile strength. Arches required the construction of wooden formwork (centering) that was removed after the arch had been laid. Chimney flues were occasionally embedded within the wall, conserving interior space as well as minimizing more costly brickwork. Where this was done, flat-laid stones accessing the flue from the outside could provide clean-out access.

Functionally, the mineral nature of the stone and mortar allowed the entire wall system to “breathe” in both directions, depending on the season, to prevent moisture build-up. The composite nature of the wall (stone and mortar) provided better insulating properties than a modern solid concrete wall of the same thickness. An air cavity between the inside lath and plaster and the interior surface of the stone wall added further insulating effect without adversely affect the ability of the wall to breathe. Another technique allowed the building to be re-used if a fire gutted the interior: floor joists pocketed into the stonework were sawn diagonally at their ends (“fire cuts”) to prevent them from levering and collapsing the walls inward when the joists fell into the building during a fire.

Stonemasons displayed their aesthetic sensibilities—and perhaps the financial wherewithal of the owner—by the decorative elements they incorporated into their stone work. They laid larger courses of ashlar stone (requiring more dressing) on the primary façade. More dressed stones require more work, but also have neater, more regular joints. Some stone sills and ledgers had dressed “picture framing” outlining their faces. Other details could include stone dentils and friezes at building cornices or corner quoining, using either more monumental stones or occasionally flat-laid limestone. Joints could provide opportunities for embellishment. Although usually left flat or struck at an angle, masons could apply a raised bead to the surface of the mortar to accentuate the stone courses. The rectilinear pattern created by such beading lent an appearance of uniformity that was otherwise difficult to achieve with Platteville Limestone. Early engravings of Saint Paul’s limestone buildings found in *Andreas’ Atlas*³³ and other period publications generally exaggerated this linearity in their depictions, paying compliment to the masons’ joint dressings that produced this impression. Where extreme uniformity was sought, the entire façade was occasionally covered with mortar (rendered or stuccoed), smoothly finished, incised with lines, or even painted to imitate monumental marble or granite stonework.

The development of masonry veneering technologies around the turn of the 19th century led to a drop in the demand for both rubble stone and the skills and knowledge to build with it. The ease and rapidity of frame construction covered by a thin veneer of masonry out-competed the slower and more expensive solid (mass) masonry construction. Newer steel frame technologies and the development of safer elevators led to greater demand for skyscrapers. The old, walk-up, stone buildings of downtown Saint Paul became obsolete, and most were demolished. Currently there are very few, if any, new rubble stone buildings being built in the US. The remaining stone houses of the city survive because of people who recognized the significance of both the buildings and the skills they represent.

³³ A.T. Andreas (Chicago, IL: Chas. Shober & Co. Lith. Co., 1874).

5. Stone masons and workers

Nineteenth century historian Thomas Newson paid homage to the stone quarrymen, stone cutters and stonemasons of Saint Paul's Pioneer Era:

Among the early settlers of Saint Paul are the names of many who did not occupy prominent positions in what is called public life, but who nevertheless did much toward laying the foundation of the embryo city, and contributed their share in building the present metropolis of the Northwest.

A few brief biographies of these men provide some sense of their diversity, settlement patterns and varying success at their trade:

Casper Reinhard, born in Bavaria in 1825, immigrated to this country in 1849, locating first in Cincinnati, where he was married, and then relocating to Saint Paul in 1856. According to Newson, Reinhard "followed the somewhat humble occupation of stone cutter and builder; suffered the disastrous financial revulsions of that and the subsequent year, and from that time until his death, August 24, 1866, he labored hard to maintain his family, hewing his way through by the sweat of his brow."³⁴

Jacob Amos, born in Hesse Darmstadt, Germany, came to this country in approximately 1850, initially settling in Franklin County, Indiana at a time when canal construction in that area employed hundreds of stoneworkers. He moved his family to Saint Paul in 1856, and lived on Bluff Street near Forbes (now Smith Avenue). Amos enlisted early in the Civil War, joining the predominantly German Company E of the 5th Minnesota Volunteer Infantry, rising to the rank of captain, and participating in the central and southern Mississippi campaigns at Corinth, Vicksburg and Nashville. After the war Amos returned to the West Seventh Street neighborhood, and is credited as the stonemason for two of the buildings included in this nomination—the Martin Weber House (202 McBoal Street) and the Anthony Waldman House (445 Smith Avenue).³⁵

Christian Reinhardt (no known relationship with Casper) began as Amos' younger business partner and later "fill[ed] numerous local contracts of importance" according to his 1886 obituary,³⁶ including several additions made to Fort Snelling in 1880. Reinhardt also served as contractor for Forts Assiniboine, Keogh, and McGinnis in Montana, and his limestone house at 383 Goodhue is included in this nomination.³⁷

John E. O'Brien, born in Ireland in 1834, immigrated to this country in 1849, and learned the trade of stone cutting in New York where he worked on the Genesee valley canal. O'Brien later moved to Cincinnati, Ohio and then Keokuk, Missouri, where he continued working at his trade. After arriving in Saint Paul in

³⁴ Thomas Newson, *Pen Pictures of Saint Paul: From the Earliest Settlement of the City, Up to and including 1857* (Saint Paul: publ. by author, 1886) (hereinafter "Newson"), p. 623.

³⁵ See Part III.

³⁶ *Globe*, Mar. 5, 1896, p. 2.

³⁷ See Part III.

1855, he worked on sewers, opened streets, and erected the Opera House, the Court and Union blocks, the Exposition Building and many other structures.³⁸

Patrick Leo, born in Ireland in 1838 where he first learned stone masonry, immigrated to New York in 1852. After working there as a mason for several years, he relocated to Saint Paul in 1857. Leo laid the stone for Ingersoll's block and the First National Bank, and later worked at Fort Totten, Fort Wadsworth, Fort Keough and other federal projects.³⁹

John Weber, who was born in Switzerland in 1827, worked in New York as a stone cutter for four years before coming to Saint Paul in 1856. He worked for six years with B. Presley, stone contractor, traveled further west working in the mines of Idaho, and finally returned to Saint Paul to open up a grocery store on Fort Road.⁴⁰

Historians captured the brief biographies of these men because they achieved some measure of success notwithstanding their humble origins. However, the vast majority of stoneworkers remained shrouded in obscurity—particularly the quarrymen and stonecutters. In 1857, long before the peak of the industry in Saint Paul, the stone quarries near the Capitol were reported to employ over 100 stone cutters. The quarries on Fourth Street employed some 30 men—all at wages rating from \$1.25 to \$2.50 per day.⁴¹ By 1886, stone cutters' average wages had risen to \$2.70 per day, while stonemasons could command up to \$3.50 per day.⁴²

Stone workers were divided into numerous sub-trades, each having gradations of skill and training. Quarrymen broke the raw rock from the ground, frequently employing dynamite and other dangerous mechanisms. They were the lowest, least-skilled workers, and sometimes competed with convict labor. "Nobblers" could roughly square a stone suitable for foundation work. More skilled "stonecutters" could cut bevels, mitres, moldings or other plain ornamentation. The most highly trained were the "stonecarvers," who could embellish a keystone, carve a classical scroll or picture-frame a cornerstone. Similar gradations of employment repeated themselves in different types of stone: granite cutters used different tools and were viewed as wholly distinct from limestone cutters, as were marble carvers.⁴³

Saint Paul's stone cutters first unionized in 1884, and a competing limestone cutters' union was formed in 1885. The stonemasons' union organized in April of 1886, quickly enrolling nearly 300 members.⁴⁴ At its inaugural meeting in Arion Hall in Saint

³⁸ Newson, p. 552-53.

³⁹ Newson, p. 655.

⁴⁰ Newson, p. 587.

⁴¹ *Pioneer & Democrat*, Sept. 11, 1857, p. 3.

⁴² *Globe*, May 1, 1886, p. 2.

⁴³ *Globe*, Apr. 11, 1886, p. 11.

⁴⁴ *Globe*, May 1, 1886, p. 2.

Paul, the Stonemasons' organizers addressed the ninety-five attendees in German, French, and Swedish, and other nationalities were also present.⁴⁵

6. Limestone Building Projects

The first limestone building in the region was at Fort Snelling in 1820. In 1836, Gen. Henry Hastings Sibley built his substantial limestone home in Mendota.⁴⁶ The first limestone building in Saint Paul proper is said to have been built in 1850 by an Irish stone mason named Michael Cummings (b. 1827).⁴⁷ It was located on Sibley Street at the Lower Levee, and was occupied by J.W. Simpson.⁴⁸ In this context the Justus Ramsey House (252 West Seventh Street), built circa 1852—roughly two years after Simpson's building—stands out as an extremely early and rare surviving exemplar of limestone construction in Saint Paul.

Only seven years after Cumming's first limestone project, the *Pioneer and Democrat* reported on the limestone building boom:

The stone taken out of these quarries [on Fourth Street and near the Capitol], finds ready sale to the numerous buildings constantly going up. When it is noted that of nearly all the stone buildings being erected in the city, the material for erection is obtained from the cellars of the buildings, and that the stone from these quarries is used mainly for cellar walls, store fronts and window sills of buildings in other portions of the city, we have [sic] some idea of the amount of substantial building progressing in the city.⁴⁹

Winchell's *Geology of Minnesota*, written by Minnesota's first State Geologist in 1882, cites a survey that counted 384 buildings in Saint Paul built entirely of locally quarried limestone, an additional 82 buildings with brick fronts and limestone sides and backs, and 208 built of brick with limestone trim—this, out of an estimated 6,912 buildings in total across the city. The Sanborn Insurance Maps for the years 1885-1888 show a total of 64 residences within the mapped areas of Saint Paul built of limestone.⁵⁰ While Winchell estimated that limestone buildings (commercial and residential) constituted only 4.5% of the total in Saint Paul, this was double the percentage in

⁴⁵ *Globe*, Apr. 4, 1886, p. 11.

⁴⁶ Upham at p. 296.

⁴⁷ Newson, p. 101, 213-4. Cummings was elected City Marshall in 1851, and later served as Chief of Police, Alderman and Board of Education. Newson hints of Cumming's susceptibility to drink, noting that had he "kept the even tenor of his way" he might have retained his prominence, but "one seeing him on the street today [in 1886] would not suppose he was the person who had filled so many important offices."

⁴⁸ Newson, pp. 101, 214. Apart from limestone, the first all-masonry building in Saint Paul, the residence of Rev. Edward Duffield Neill on Fourth Street near Washington, was completed in the fall of 1849, the same year that the Territorial Legislature convened and Governor Ramsey arrived. Ironically, amidst the abundance of stone, Rev. Neill chose to use clay brick purchased from Brawley's brick kiln in Uppertown. He reportedly paid the significant expense of \$6 per 1,000 bricks—more than twenty times the cost of quarried limestone. Frank C. Bliss, *Saint Paul, Its Past and Present* (Saint Paul: F.C. Bliss Publishing, 1888), p. 111.

⁴⁹ *Pioneer & Democrat*, Sept. 11, 1857, p. 3.

⁵⁰ Winchell, *Geology of Minnesota*, p.191-2.

Minneapolis.⁵¹ Moreover, the general stature of these buildings gave them a prominence that was disproportionate to their number. The principal buildings constructed in the Pioneer Era wholly of locally quarried limestone included the United States Customs House, the county jail, the (former) post office, the Catholic cathedral, the German Catholic Assumption Church, the Unitarian Church, Saint Paul's Episcopal Church, the Fire and Marine Insurance Building, the entire McQuillan block, Dawson's Bank building, the Saint Paul Roller Mill, the Adams, Washington and Franklin school houses, the mansions of Alexander Ramsey, A. Vance Brown, Louis Roberts, Chauncy Griggs, and William McGroarty, nearly every brewery, and many other business blocks, homes and churches across the city.⁵²

The apparent novelty of limestone buildings in the city today is somewhat misleading, resulting from decades of demolition and redevelopment rather than any original rarity. Indeed, within the original downtown core, stone and brick were the only materials allowed in new construction beginning in 1855.⁵³ This so-called "fire limits" ordinance was aggressively enforced following two calamitous fires in August of 1857 that destroyed more than dozens of grandfathered wood frame buildings on Third and Robert Streets.⁵⁴ While pre-existing wood frame buildings continued to be grandfathered, by the 1870s decades of new construction in limestone had left large parts of the downtown, especially the heavily commercialized corridors in Lowertown along Third, Sibley, Jackson and Robert streets, with a characteristic grey, weathered limestone face. The fact that very few limestone buildings dating from the Pioneer Era survive today in the downtown core of the city, and only a handful remain extant on its periphery, lends them a novelty they never had in their own day.

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⁵¹ Winchell, *Geology of Minnesota*, p.193.

⁵² Winchell, *Geology of Minnesota*, p. 191.

⁵³ Proceedings, 1855 at p. 502 (first passage of ordinance establishing municipal "fire limits").

⁵⁴ J. Fletcher Williams, p. 376.

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