

Westminster Junction— Turn-of-the-Century Railroad 'Highway'

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Cascade Creek, from Harper's New Monthly Magazine, in 1860. The creek was named after a waterfall that was described in early travel literature about the St. Paul area. This engraving probably depicts the namesake cascade. The waterfall, now dry, can be seen today along the Mississippi bluffs near Colborne Street. See the article beginning on page 4. Photo from the Minnesota Historical Society collections.

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A Message from the Editorial Board

Two themes run through this spring issue of *Ramsey County History*. One theme is engineering; the other is people. Greg Brick's lead article, which tells the story of Cascade Creek, is another in our St. Paul Underground series, which was suggested some years ago by the late Reuel Harmon. Both this article and that by Andrew Schmidt on the local railroad area known as Westminster Junction represent historical research into little-known sources of St. Paul engineering and transportation history

The theme of people plays a secondary role in the stories of Cascade Creek and Westminster Junction, but this theme is foremost in Jean Hanna's account of her mother, Rose Hanna, and her journey from Palestine to St. Paul in the 1950s; in Joe Lepsche's article on the history and people of the Upper Levee; and in Charlotte McKendree Wright Lewis's reminiscence of the Fourth of July Extravaganza on Grand Hill. These writers convey vividly the enduring diversity of the area's people and how their individual stories are today a part of the larger story of St. Paul and Ramsey County.

> John M. Lindley Chair, Editorial Committee

Westminster Junction and Its Tunnels— An 1880s 'Highway Intersection' for the Railroads

Andrew J. Schmidt

I f you stand on the Lafayette Road bridge, just north of the junction of University Avenue and Lafayette, and look northwest, you can see two railroad tunnels. Look closely and you can see a date on one of the keystones reading "1885." Those tunnels are part of a historic railroad corridor known as Westminster Junction. The junction played an important role in the development of St. Paul as a regional transportation hub, and it was one of the busiest railroad corridors in the Twin Cities during the late nineteenth and early twentieth centuries. In addition, Westminster Junction is a rare example of railroad tunnel construction in Minnesota.

Following the Trout Brook ravine in a northwesterly direction out of St. Paul's Lowertown, this historic railroad corridor utilized the natural topography of the tributary stream. The ravine was one of the few routes providing a suitable grade for railroads to climb the steep Mississippi valley bluffs around St. Paul, yet its narrowness limited the number of tracks. To solve the problem, the Northern Pacific Railway built a series of tunnels under the St. Paul, Minneapolis & Manitoba (later the Great Northern) and the Chicago, St. Paul, Minneapolis & Omaha tracks (later Chicago and Northwestern). Built in stages between 1862 and 1909, the junction currently contains railroad tracks, four tunnels, retaining walls, a switching tower, three original culverts, and a number of sewer drains. Features no longer standing include the Soo Line tunnel and bridge, the Westminster Street viaduct, and several sets of tracks.

First Railroad Charter

Although most of Minnesota's railroad building occurred after the Civil War, the first charter was granted in 1857 to the



Westminster Junction tunnel, photographed on September 14, 1885. The junction, by the early 1920s one of the busiest in the Twin Cities, lies about one city block northwest of the Lafayette Road bridge. Two of its tunnels can be seen from the bridge. This view is looking toward the south. Photo courtesy of the National Railway Historical Society, North Star Chapter.



Westminster tunnel in 1886. This is a view from the top of the south portal. Photo courtesy of the National Railway Historical Society, North Star Chapter.

Minnesota and Pacific Railroad. Three years later, however, the company had only managed to grade a roadbed from St. Paul to St. Anthony, following the Trout Brook ravine and running west. By 1862 the company, reorganized as the St. Paul and Pacific, completed the line from St. Paul to St. Anthony, making it the first railroad in Minnesota. Located at the head of navigation on the upper Mississippi, St. Paul was a natural terminal for railroads, and by the mid-1870s, the city had gained connections in all four directions. The smaller, pioneer railroads first radiating from the city were swallowed up in mergers by the late 1870s and early 1880s, giving St. Paul more regional connections and increasing its importance as a rail hub.

The St. Paul, Minneapolis & Manitoba (Manitoba) took over the old St. Paul & Pacific in 1879 and later became part of the Great Northern Railway, "Empire Builder" James J. Hill's line. In 1880–1881, the St. Paul, Stillwater & Taylors Falls Railroad merged with several others to form the Chicago, St. Paul, Minneapolis & Omaha (Omaha), which in turn merged with the Chicago and Northwestern in 1904 and is currently part of the Union Pacific system. By the turn-of-the-century, St. Paul had become a gateway to the northwest. No less than nine railroads served the city and a number of them had headquarters in the city, including Hill's line and the Northern Pacific.¹

The geography of St. Paul, along with the city's early dependence on steamboat traffic, encouraged the construction of warehouses in the Lowertown area. Following the Mississippi River and its tributary valleys, and attracted to the growing warehouse district, the railroads converged in Lowertown. The railroad companies, after operating separate depots for a number of years, joined together in 1879 to build the Union Depot at Third and Sibley streets, located at the base of the imposing river bluffs surrounding Lowertown. The Union Depot could only be accessed along the Mississippi River or the Phalen Creek/Trout Book valley. A great deal of St. Paul's rail traffic, as a result, was concentrated in those areas, particularly through Trout Brook. In order to ease the congestion and to provide itself with direct access to the Union Depot, rather than leasing tracks from the Manitoba line the Northern Pacific constructed a series of tunnels through the Westminster Junction in 1885-1889.

Busy Junction

Westminster's history predates the tunnels by some twenty years, however. The corridor through which the first railroad traveled in 1862 included the Trout Brook valley. Because the valley was marshy and prone to spring flooding, the railroad companies using the corridor continuously added fill and eventually channeled Trout Brook itself. The junction was created in 1872 when the St. Paul, Stillwater & Taylors Falls connected with the St. Paul & Pacific near Westminster Street. An iron viaduct was built to carry Westminster Street over the Manitoba and Omaha tracks prior to 1885. The old viaduct is said to have been demolished during World War II and salvaged for scrap.

During the mid to late-1880s, there was a flurry of construction at Westminster Junction. After building a line into St. Paul, which connected with the Manitoba tracks just north of the junction with the Omaha, the Northern Pacific in 1885 paid the Manitoba \$10,000 for the right of way to construct a stone arch tunnel beneath the existing tracks at Westminster Street. Completed in 1886, the two tunnels forming the West Side Line gave the Northern Pacific direct access to its Fourth Street freight house in Lowertown.

The Manitoba built two additional main tracks and improved the grades in the Trout Brook valley in 1887–1888. In order to gain direct access to the Union Depot, the Northern Pacific constructed the East Side Line beneath the Omaha tracks, including two more tunnels, in 1888–1889. Although an exact construction date for the Trout Brook culverts is not known, the construction technique matches that of the tunnels, suggesting the late 1880s. Some twenty years later, in 1909, the Soo Line added a tunnel of its own beneath the Great Northern tracks west of the West Side Line.

The Westminster Junction was one of the busiest in the Twin Cities by the early twentieth century. In 1930 the Northern Pacific's district engineer for St. Paul noted that the tracks through the junction were "extremely busy," and that any repair work to be done should avoid even temporary shutdowns of the tracks. A

1937 study of the Twin Cities' terminal and transfer facilities reported that the functions of the Chicago and Northwestern (Omaha) East St. Paul Yard and the Northern Pacific Mississippi Street's Yard could not be consolidated as part of a proposed single transfer point at the Dayton's Bluff/Pig's Eye yards. Traffic in the East St. Paul and Mississippi Street yards, whose destination or departure point was the Union Depot, passed through Westminster Junction. The report also indicates that, as of 1934, Westminster handled the third largest volume of freight compared to other junctions in the Twin Cities. The volume of 1,116 freight cars that passed through Westminster Junction each day was surpassed only by the 1,416 cars passing through the St. Paul Union Depot area and the 1,288 cars through the Minnesota Transfer area.

The 1937 terminal study indicates that Westminster Junction carried a large amount of passenger traffic, as well as freight. Two of the three main passenger routes between St. Paul and Minneapolis passed through the junction, including the Great Northern route, which, in addition to its own passenger cars, carried those of the Chicago and Northwestern, the Chicago and Great Western, the Chicago, Burlington and Quincy, and the Northern Pacific. In addition, the Northern Pacific lines carried Soo Line and Minneapolis and St. Louis passenger cars. Information taken from a 1941 passenger train schedule indicates that, of the ninety-six passenger trains per day departing from and arriving into the Union Depot, sixty-four passed through Westminster Junction.3

Like any well-used structures, the Junction was subject to repairs and minor alterations, particularly during the 1920s and 1930s. Because the roof of the Westminster tunnel was deteriorating, it was repaired in 1922 and some of the stonework removed, creating a concrete-supported opening in the roof. The concrete deck and wooden deck added along the Chicago and Northwestern overpasses were built by 1926.

Trout Brook was an open, channeled creek until 1927, when the city of St. Paul built a sewer to carry the stream.

The concrete drains were probably built in conjunction with the new sewer. By the mid-1930s, clearance through the tunnels within the junction was insufficient for the larger locomotives and double stack carloads that were becoming common. In 1937 the Northern Pacific lowered the grade in the tunnels in order to provide increased overhead clearance and to provide additional space for track spreading. The original switching tower, a square, two-story building with a hipped roof, was replaced by the current building circa 1940. Reflecting the declining fortunes of the railroads after World War II, many of the tracks crossing through the junction have been removed in recent years, and the Soo Line tunnel was abandoned and filled during the early 1980s.4

Engineering Behind It

Railroad companies built tunnels infrequently, due to the expense and difficulty of construction. In Minnesota particularly, the level topography obviated the need for tunnel construction, and such structures are rare. The steep grades of the land around St. Paul's Union Depot, however, make its topographic challenges unusual in Minnesota. The rise out of the Mississippi Valley along Trout Brook is 90 feet per mile, which approached the Northern Pacific's recommended maximum of 116 feet per mile. In fact, for trains traveling from St. Paul to Brainerd, 200 feet of the 500-foot rise in elevation are surmounted in the first five miles.

The steep Mississippi River bluffs surrounding St. Paul presented problems for railroad companies seeking access to the warehouse district in Lowertown. One of the few natural approaches was the Trout Brook tributary valley. As the number of railroads serving St. Paul increased during the 1870s and 1880s, however, the narrow Trout Brook valley became increasingly congested. By the mid-1880s, the Northern Pacific sought direct access to Lowertown and therefore needed grade-separated crossings to bypass the Omaha and Manitoba lines already in place. Northern Pacific engineers solved the problem by constructing a series of tunnels beneath the existing railroad tracks.

The practice of railroad tunnel construction in America pre-dates Westminster Junction by some fifty years. Though tunnels were built for canals in the 1820s. the Allegheny Portage Railroad built the first railroad tunnel near Johnstown, Pennsylvania, in 1831. Another notable early tunnel was the Hoosac, a massive, 4.75-mile-long structure between Boston and Albany, which was built in 1854-1876. The Washington Street tunnel under the Chicago River in Chicago was the first vehicular tunnel, constructed in 1866. By the mid-1880s, Northern Pacific engineers had considerable tunnelbuilding experience. Over the period of 1881-1883, the company built two large tunnels in the Rocky Mountains in Montana: the Mullan tunnel, a 3,850-foot structure, and the Bozeman tunnel, which measured 3,610 feet. Although it is not among the earliest or largest tunnels nationally. Westminster Junction's West Side Line tunnel is among a select group. As late as 1945, there were only 105 double-tracked tunnels longer than 1,000 feet nation-wide.

Construction of the tunnels would not have been overly demanding from a technical standpoint. Photographs taken during construction of the West Side Line indicate that the tunnels were built with the cut and fill method, using wooden centering to support the arches. Wooden trestle bridges supported the overpassing Manitoba and Omaha lines while the tunnels were built. The arches themselves are of a much simpler design than the contemporary Seventh Street Improvement Arches, which were completed in 1884 and used the helicoidal-arch method. Nonetheless, the tunnels are a fine example of nineteenth century. stone-arch construction, and the ashlar masonry illustrates a high degree of craftsmanship.6

A Single Track

The topography requiring the tunnel construction remains evident. Running northwest out of Lowertown, the ravine narrows just past the Lafayette Road bridge, then fans out towards the top of the bluff line. The railroad right-of-way separates into three main grades just southeast of the bridge. Historically, the



The junction in 1926. These views taken in September, 1926, show the Westminster Street tunnel beneath the east leg of the Chicago, St. Paul, Minneapolis & Omaha wye, and the tracks looking west from the Westminster Street bridge. Both photographs are from the Northern Pacific Railway Company records at the Minnesota Historical Society.

east and west side lines carried the Northern Pacific tracks while the middle grade contained the Manitoba and Omaha tracks. Using the valley to negotiate the steep Mississippi River bluffs surrounding downtown St. Paul, the rail beds were graded at different inclines in order to allow the Northern Pacific tracks to pass beneath the other two lines. The center grade rises more quickly than the eastern and western grades and is supported by rough-cut limestone and mortar retaining walls. Reaching the top of the incline, the sets of tracks separate-historically, the Omaha turning northeast and the Manitoba continuing northwest.

On either side of the center grade there are tunnels designed to allow grade-separated crossings at the junction. The Westminster tunnel is on the west side of the center grade and passes beneath the old Manitoba tracks, running in a northnortheasterly direction. Currently, a single track runs through the tunnel. It is the longest of the four tunnels, measuring 1.048 feet. The tunnel was built with ashlar stone masonry, and on the south portal there is a keystone that reads "1885." Stepped, perpendicular wingwalls of ashlar limestone support the structure. North of the tunnel, ashlar stone retaining walls support the embankments on either side of the track and connect the Westminster tunnel to the north end tunnel. To the south a single ashlar stone retaining wall supports the center grade and continues to just south of the Lafayette bridge.

Another tunnel to the east of the center grade crosses beneath the old Omaha tracks in a northwesterly direction. At present, one track passes through the tunnel. Known as the East Side Line, the eastern tunnel was built in 1888-1889. Measuring 287 feet in length, this elliptical arch tunnel also consists of ashlar stone masonry, and it is built into the retaining wall of the center grade. Like those of the West Side Line, perpendicular, cut-stone wingwalls support the tunnel. Although there are no retaining walls north of this tunnel, there is one to the south, which supports the center grade and runs to just south of the Lafayette bridge. Immediately south of the tunnel, atop the retaining wall, the center grade was widened circa 1925 with wooden ties supported by steel piers on concrete footings.

The northern portion of Westminster Junction consists of two side-by-side tunnels crossing underneath a single eastwest running track (historically the Omaha). Although the tunnels appear to be a single twin-arch bridge, they were, in fact, constructed at different times, in 1885 and 1888. Historically, the two tunnels brought together the divergent Northern Pacific tracks, which ran on the east and west sides of the center grade. Originally double tracked, each tunnel now gives passage to a single line. These round-arch tunnels measure 69 feet in length and, like their counterparts to the south, were constructed with ashlar stone

masonry and have perpendicular, cutstone wingwalls. On the south side of the western tunnel, a concrete deck and wingwalls were added circa 1925 in order to widen the Chicago and Northwestern corridor crossing overhead.

Approximately 100 feet west of the West Side Line, there are the remains of the Soo Line tunnel. This tunnel, constructed in 1909, provided the Soo Line with direct access to its Seventh Street freight house. The tunnel is collapsed, however, and it was filled in during the early 1980s. Williams Hill, west of the former tunnel, has been leveled and is currently the site of a large pile of fill and rubble. Farther to the west, almost to Mississippi Street, there is an abandoned track which passed on the west side of Williams Hill and served the Great Northern's Seventh Street freight house. Along the west leg of the wye, there is an old spur line which serviced a Great Northern ice house. The ice house, no longer standing, was located just west of where the Great Northern tracks crossed over the Soo Line tunnel.

There are three round-arch, cut-stone culverts within the junction area which were used to channel Trout Brook before the underground sewer was built in the mid-1920s. One culvert runs north-south and is located just west of the north-end tunnels. The other two culverts run west to east. Located just south of the northend tunnels, these culverts are built into the retaining walls on the West Side Line.



Westminster Junction as it looked sixty years later. The east and west side tunnels and the Trout Brook culvert, rare examples of railroad tunnel construction in Minnesota, were photographed by the author in 1996.

Unique Junction

As the number of railroad track miles has dwindled in Minnesota during the post-World War II era, so too have the number of resources illustrating the industry's heyday. Although St. Paul was born on the Mississippi, it is easy to forget that the city grew up with the railroads, particularly as the number of nineteenth and early twentieth century railroad structures declines. With three different railroad mainlines crossing through the area, Westminster Junction was an 1880s version of the intersection of three interstate highways. The junction illustrates the importance of the railroads in the development of the city of St. Paul. In addition, railroad tunnels were rarely built in Minnesota. The confluence of railroad lines and the series of tunnels that provide grade-separated interchanges make Westminster Junction unique in the state of Minnesota.

Notes

¹For general histories of those railroads and corporate lineages, see: J.C. Luecke, *The Chicago & Northwestern in Minnesota*, Eagan, Minnesota: Grenadier Publications, 1990; R.S. Prosser, *Rails to the Northstar*, Minneapolis: Dillon Press, 1966; L.T. Renz, *The History of the Northern Pacific Railroad*, Fairfield, Washington: Ye Galleon Press, 1980; E.V. Smalley, *History of the Northern Pacific Railroad*, New York: Arno Press, 1975.

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Trackage, St. Paul to Minneapolis, In Joint Facilities Records, Chief Engineer, Northern Pacific Railway Company Records, Minnesota Historical Society, St. Paul, 1926; Northern Pacific Railway Company, Westminster Tunnel; St. Paul: Northern Pacific Railway Company, 1885; Saint Paul, Minneapolis & Manitoba Railroad Company, Annual Reports, St. Paul: Saint Paul, Minneapolis & Manitoba Railroad Company, 1888; Sanborn Map Company, Sanborn Fire Insurance Maps of St. Paul, New York: Sanborn Map Company, 1885 and 1903.

³Northern Pacific Railway Company, Letter from St. Paul District Engineer to W.H. Strachan, In District Engineer Subject Files, Northern Pacific Railway Company Records, Minnesota Historical Society, St. Paul, 21 February, 1930; Great Northern Railway Company, Twin Cities Terminal Study, In the Vice-President—Operating Subject Files, Great Northern Railway Company Records, Minnesota Historical Society, St. Paul, 1937; National Railway Publishing Company, Official Guide of the Railways and Navigation Lines, New York: National Railway Publishing Company, 1941.

⁴Northern Pacific Railway Company, Letter to Charles Donnelly, In the President's Subject Files, Northern Pacific Railway Company Records, Minnesota Historical Society, St. Paul, 1922; Northern Pacific Railway Company, *Trackage, St. Paul to Minneapolis*, 1926; Northern Pacific Railway Company, Letter to Charles Donnelly, In the President's Subject Files, Northern Pacific Railway Company Records, Minnesota Historical Society, St. Paul, 1937; Northern Pacific Railway Company, *Westminster Junction*, In Office of Bridge Engineer files, Northern Pacific Railway Company Records, Minnesota Historical Society, St. Paul, 1937. ⁵H.W. Richardson and R.S. Mayo, *Practical Tunnel Driving*, New York: McGraw-Hill Book Company, Inc., 1941; Smalley, *History of the Northern Pacific Railroad*, 1975; C.M. Burpee, *Railway Engineering and Maintenance Cyclopedia*, Chicago: Simmons-Boardman Publishing Corporation, 1945.

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Andrew J. Schmidt is senior historian for the 106 Group in St. Paul that conducted this study.

This research project on the history and development of Westminster Junction was undertaken as a cultural resources investigation for the Environmental Impact Statement for the proposed Phalen Boulevard on St. Paul's East Side. Special thanks go to the City of St. Paul, who sponsored the investigation; Short, Elliott, Hendrickson, Inc. the consulting engineering firm; Aaron Isaacs of the Minnesota Transportation Museum, who shared his wealth of railroad history knowledge; and to staff members at the Minnesota Historical Society, the State Historic Preservation Office, and the Ramsey County Historical Society.



Centers for the flat arch of the Westminster tunnel. This view, taken on April 9, 1886, is looking toward the south. Photo courtesy of the National Railway Historical Society, North Star Chapter. See article beginning on page 9.



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