historic resource study

DELAWARE, LACKAWANNA AND WESTERN RAILROAD LINE SCRANTON TO SLATEFORD JUNCTION

PENNSYLVANIA

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by

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INTRODUCTION

Construction of the Delaware, Lackawanna and Western Railroad's southern division from Scranton, Pennsylvania to the Delaware River began in June 1852. It evolved from a plan by Seldon and George Scranton to connect their borough with New Jersey and thus promote the Scranton economy. When completed in May 1856, the line had a profound effect upon the Moosic and Pocono Mountains territory through which it ran. This relatively uninhabited area began to teem with activity as the railroad provided the opportunity to exploit it. Lumber and tanning interests expanded through that section of northeast Pennsylvania to the detriment of the woods. With the demise of those industries in the 1880s, ice harvesting followed. In the end, the railroad-fostered vacation business predominated.

Although the Delaware, Lackawanna and Western promoted the area's growth, outside of Scranton and to some extent East Stroudsburg the region never attained an industrial or manufacturing base. As a result, the area never provided the DL&W with a large transportation business. Most trains that traversed that section of track never stopped, for their destinations lay elsewhere.

This document describes the development, improvement, and maintenance of a railroad right-of-way required for proper functioning. It also presents the operation of Delaware, Lackawanna and Western Railroad trains over that route from Scranton to Slateford Junction, Pennsylvania. In addition it depicts the impact of the DL&W on that portion of its line. Hopefully, the report will convey the importance of this facet of American railroad and transportation history to park managers, planners, and interpreters and, through them, the American public.

CHAPTER 1
SCRANTON AREA RAILROAD DEVELOPMENT

Anthracite in the northern or Wyoming coal field gave many promoters the impetus to build railroads in the Scranton area. Although some ventures did not survive, the railroads that did prosper provided the Scranton region with an efficient transportation network. By the early twentieth century, five steam railroads and two electric powered lines radiated from Scranton. As a result, a large part of the area's economic foundation depended on those railroads for their freight and passenger service.

A. Delaware and Hudson Canal Company

Although not the first railroad into Scranton, the Delaware and Hudson operated the first railroad in the area. This canal and gravity line system grew from the ambitions of two Philadelphia dry goods merchants. In the period following the War of 1812, Maurice and William Wurts often made hunting and fishing trips into the sparsely settled area of northeast Pennsylvania. While in that region, they encountered anthracite coal outcroppings. Hoping to profit from their find, they purchased some of the land on which this fuel was located and, in 1822, hauled 100 tons of anthracite to Philadelphia. This venture did not succeed since the market in their home town was oversupplied with anthracite from the more southerly Lehigh coal fields. The Wurts decided to try the New York market, but getting coal there was not easy. A canal seemed to offer the best means of transportation. They chose a 108-mile route from a site in Pennsylvania, which became the borough of Honesdale, to Rondout, New York, on the Hudson River. From the latter location they could ship the coal both south to New York City or north to Albany and Troy.[1]

The Wurts brothers organized their venture in 1823. On March 13 of that year, the Pennsylvania Legislature authorized a canal and in the following month, on April 23, the New York legislature granted them incorporation for the Delaware and Hudson Canal Company. Construction, however, did not begin on the canal until July 13, 1825. Since the

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1. Jim Shaughnessy, *Delaware & Hudson: The History of an Important Railroad whose Antecedent was a Canal Network to Transport Coal* (Berkeley: Howell-North Books, 1967), 1; Roger B. Saylor, *The Railroads of Pennsylvania,* Industrial Research Report No. 4, Bureau of Business Research, College of Business Administration (University Park: Pennsylvania State University Press, 1964), 48; Donald L. Miller and Richard E. Sharpless, *The Kingdom of Coal: Work, Enterprise and Ethnic Communities in the Mine Fields* (Philadelphia: University of Pennsylvania Press, 1985), 35-37; Frederick L. Hitchcock, *History of Scranton and Its People,* Vol. I (N.Y.: Lewis Historical Publishing Co., 1914), 110-111.

canal terminus at Honesdale did not reach to the coal fields near Carbondale, Pennsylvania, company officials decided to build a gravity railroad to cover the mountainous sixteen miles between the two towns. Permission to build the line was received from the Pennsylvania legislature on April 5, 1826. It was completed on October 8, 1829--one year after the canal.[2]

By 1843 the Delaware and Hudson directorate purchased coal property down the Lackawanna River valley. As a result, in that year it extended the gravity road seven miles from Carbondale southwest to company owned land at Archbald. Further land purchases in the 1850s brought the tracks from Archbald through Olyphant to Valley Junction in 1858. Two years later, rails were laid another four miles to Providence on the north side of Scranton. Steam locomotives were used to move the cars on this four-mile length of track. In 1863 a short extension brought the railroad into Scranton where a depot was established on the corner of Vine Street and Franklin Avenue. That station served until 1894 when a new depot opened on Lackawanna Avenue near Mifflin Avenue.[3]

Shortly after the end of the Civil War, the Delaware and Hudson leadership made plans to capture northern coal markets--particularly in New York. To achieve this goal meant continued track construction and hauling agreements with other lines. In September 1868 the company contracted with the Erie Railroad to build a line north from Carbondale to connect with the Erie main line at Lanesboro, Pennsylvania, a distance of approximately thirty-seven miles. At the same time the Delaware and Hudson management obtained an agreement from the Erie to have coal hauled from Lanesboro to Binghamton, New York, over the Erie's track. The Delaware and Hudson leaders also obtained a permanent lease of the Albany and Susquehanna Railroad, which operated between Binghamton and Albany.[4]

Gaining rail access to Albany, New York, did not end the Delaware and Hudson expansion. That company formalized a lease in May 1871 by which it gained the Rensselaer and Saratoga Railroad in perpetuity. This line ran from Albany to the head of Lake Champlain at Whitehall, New York. From the latter town it crossed into Vermont

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2. Shaughnessy, *Delaware & Hudson,* 2-6; Saylor, *The Railroads of Pennsylvania,* 48.

3. Shaughnessy, *Delaware & Hudson,* 39; Hitchcock, *History of Scranton and Its People,* I:110-112.

4. Saylor, *The Railroads of Pennsylvania,* 48-49; Shaughnessy, *Delaware & Hudson,* 61-63.

where it connected with the Rutland and Burlington Railroad at Rutland. The Rensselaer and Saratoga also connected with the Adirondack Railroad in the upper Hudson River valley.[5]

Acquiring the Rensselaer and Saratoga Railroad with its connection to the Adirondack created an opportunity for the Delaware and Hudson to expand its passenger service. The company had begun a rudimentary service in 1860 between Carbondale and Providence. Passengers, however, had to ride the gravity line for part of the distance until 1870 when a locomotive road was opened for the entire route. With the expansion in New York, the Delaware and Hudson began connections with the central Adirondack Mountain resorts where large numbers of the wealthy traveled to places like Saratoga Springs.[6]

The search for more markets brought increased expansion in the 1870s and 1880s. Between 1873 and late 1875, the Delaware and Hudson managers extended the rails from Whitehall to Rouse's Point on the Canadian border. A connection was made at the border with the Grand Trunk Railway, a Canadian firm. The D&H, thereby, had a link to Montreal that expanded its anthracite coal market. By 1880 the Delaware and Hudson operators agreed to a cooperative venture with the Boston, Hoosac Tunnel and Western Railway by which a new route would be opened between Boston and Schenectady. When it began operations in 1881 the Delaware and Hudson had access to Boston. In 1886 the Delaware and Hudson obtained the Lehigh and Susquehanna Railroad that extended from Scranton to Wilkes-Barre. Finally, on July 11, 1889 the D&H purchased the Adirondack Railway that ran from Saratoga Springs to North Creek, New York. The increased numbers of vacationers drawn to the area made it an attractive buy.[7]

An era ended for the Delaware and Hudson in 1898. On November 5 of that year the last coal boat passed down its old canal. The gravity railroad closed on January 3, 1899. As a result, the Delaware and Hudson Canal Company managers received

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5. Shaughnessy, *Delaware & Hudson,* 68-69.

6. *Ibid.,* 41, 68-69.

7. Shaughnessy, *Delaware & Hudson,* 129, 151, 169, 185; Hitchcock, *History of Scranton an Its People,* I:113.

permission in April 1899 to change the firm's name to the Delaware and Hudson Company.[8]

The first decade of the twentieth century found the Delaware and Hudson leadership expanding their line into Canada. In 1906 the company purchased the Quebec, Montreal, and Southern Railway. Its 143 miles extended almost to Quebec City. Although it had been acquired with the intent to complete the track to Quebec City, that plan never came to fruition. In the Spring of 1907 the Delaware and Hudson owners bought another Canadian line called the Napierville Junction Railway. This twenty-nine mile line ran from Rouse's Point, New York north to St. Constant, Quebec on the Grand Trunk Railway. By agreement with the latter railway, the D&H used its track to complete the link to Montreal. As a result, the Delaware and Hudson became part of the shortest route from New York to Montreal. The reason for buying the Canadian railroads was to haul pulpwood south to the paper mills in the upper Hudson Valley and establish new coal markets to the north.[9]

The central focus of the Delaware and Hudson operation came to reside in New York where most of its trackage was located. When several of its shops became obsolete by 1910, including the repair facility at Carbondale, the D&H constructed a huge shop area at Colonie, just north of Albany.[10]

By the mid-1920s the Delaware and Hudson management began to abandon track in the name of efficiency. With a high of 895 miles under operation, the first track reduction of 12.76 miles took place in February 1925. Another loss involved 143 miles in 1929 when management sold the unprofitable Quebec, Montreal and Southern Railway to the Canadian National Railway. This prudence kept the company solvent even in the 1930s depression years at a time when anthracite tonnage, a main source of freight revenue, had begun to decline. By 1938 the drop in anthracite freight prompted the newly appointed president, Joseph Nuelle, to promote a new transportation mission. By taking advantage of the company's unique position of connections to Canada, New England, and New York, Nuelle sought to capture more freight by acting as a bridge to haul non-area railroads' freight to and from those areas. To promote those connections, he saw speed as an attractive selling

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8. Shaughnessy, *Delaware & Hudson,* 192-193; Saylor, *The Railroads of Pennsylvania,* 49.

9. Shaughnessy, *Delaware & Hudson,* 219-226; Jules I. Bogen, *The Anthracite Railroads: A Study in American Railroad Enterprise* (N.Y.: Ronald Press Co., 1927), 201-202.

10. Shaughnessy, *Delaware & Hudson,* 281.

point, so, in keeping with this vision, Nuelle purchased larger, faster locomotives. His efforts produced a significant increase in bridge traffic by 1941. Using his example, succeeding Delaware and Hudson leaders kept the company solvent by continuously adopting advanced technology and using efficient management. As a result, the line eluded financial problems until the late 1970s. The declining Northeastern industrial base, however, finally brought economic hardship to the Delaware and Hudson. It entered bankruptcy in 1987.[11]

B. Pennsylvania Coal Company Railroad

The second railroad in the Scranton area, like the Delaware and Hudson, was a gravity line. Organized in 1838, the Pennsylvania Coal Company determined to construct a gravity railroad from Pittston to the Delaware and Hudson canal at Hawley, Pennsylvania, for the transport of anthracite coal. For its first ten years, however, the Pennsylvania Coal company officials shipped their anthracite from the Pittston mines down the Susquehanna by canal. Only in 1848 did construction begin on the gravity line. This road was built in a loop. A heavy track for loaded cars ran from Pittston to Dunmore from where it proceeded to Nay Aug or Greenville (as it was known at the time) and then through Cobb's Gap along the Roaring Brook, and over Moosic Mountain to Hawley. On the return from Hawley, a light track for empty cars circled to the south of the heavy track and entered Elmhurst from the northeast. It then followed Roaring Brook to Dunmore. As it passed through Cobb's Gap it paralleled the heavy track. Planes number 6 and 7 were in Dunmore. Planes were sections over which cars were hauled by animals or small steam locomotives. Number 6 was located on the site of the later Erie Railroad shops now owned by DeNaples Auto Parts. Plane number 7 occupied the site now covered by Dunmore Number 7 Reservoir. As part of the area water supply, the reservoir took its name from the old plane number.[12]

The gravity railroad was completed in late 1849 and opened in 1850. It functioned as a loop gravity railroad for mainly freight until 1884. In that year the Erie and Wyoming Valley Railroad absorbed the Pennsylvania Coal Company. The Erie and Wyoming Valley

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11. Saylor, *The Railroads of Pennsylvania,* 53; Shaughnessy, *Delaware & Hudson,* 307, 309, 347, 351, 366; Delaware and Hudson Company, *A Century of Progress: History of the Delaware and Hudson Company 1823-1923* (Albany,N.Y.: J.B. Lyon Co., 1925), iii.

12. Thomas Murphy, *Jubilee History Commemorative of the Fiftieth Anniversary of the Creation of Lackawanna County Pennsylvania,* Vol. I (Indianapolis: Historical Publishing Co., 1928), 453; Hitchcock, *History of Scranton and Its People,* I:107-108.

converted the line to a steam locomotive road. In doing so, the new owners abandoned the heavy track portion of the loop and chose the light track grade for its route between Pittston and Hawley. This line paralleled the Delaware, Lackawanna and Western Railroad track between Dunmore and Elmhurst. For most of that distance it was located on the opposite side of Roaring Brook. At the same time in 1884, the Erie and Wyoming Valley ran a spur from its main line in Dunmore into Scranton to accommodate a greater emphasis on passenger service. In the latter city the company established a depot on the corner of Washington Avenue and Pine Street.[13]

In 1901 ownership changed once more for the old Pennsylvania Coal Company Railroad. That year the Erie Railroad acquired the Erie and Wyoming Valley line. The Erie constructed repair shops in Dunmore in that same year. The main building of this complex still exists. Owned by DeNaples Auto Parts, it can be viewed from the Delaware, Lackawanna and Western tracks as a large orange structure. The Erie operated the road and shops until it merged with the Delaware, Lackawanna and Western in 1960 to form the Erie Lackawanna. At that time the management chose to use the former DL&W shops in Scranton.[14]

C. Lackawanna Railroad

Although similar in name to the Delaware, Lackawanna and Western Railroad, this concern of brief life had no ownership connections to the DL&W. In 1854 William Jessup decided to construct a freight railroad that would connect with the then-under-construction Delaware, Lackawanna and Western Railroad near Nay Aug. By agreement the DL&W consented to accept freight shipments (basically anthracite coal) that Jessup brought over his line to the juncture of the two roads near Nay Aug. He received a charter to build his line from the state legislature in 1854 and organized the Lackawanna

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13. Hitchcock, *History of Scranton and Its People,* I:107-109; Murphy, *Jubilee History,* I:106,453; Margaret M. O'Hora, *History of Dunmore, Pennsylvania* (Dunmore: Dunmore Improvement Assn., 1937), 51; David Craft, W.A. Wilcox, Alfred Hand, and J. Woolridge, *History of Scranton, Penn. with Full Outline of the Natural Advantages, Accounts of the Indian Tribes, Early Settlements, Connecticut's Claim to the Wyoming Valley, the Trenton Decree, Manufacturing, Mining, and Transportation Interests, the Press, Churches, Societies, Etc., Etc., Down to the Present Time* (Dayton, Ohio: United Brethren Publishing House, 1891), 354.

14. Hitchcock, *History of Scranton and Its People* I:109; O'Hora, *History of Dunmore, Pennsylvania,* 51; Murphy, *Jubilee History,* I:453.

Railroad. Among the stockholders that he attracted was the Mexican President, General Antonio Lopez de Santa Anna, who subscribed $125,000.[15]

Jessup planned to build the railroad in two phases. The first stage would cover the sixteen miles between his coal mines at the village of Jessup (northeast of Scranton) and Nay Aug. In the second phase the line would be extended northeast from Jessup to Meredith (now Childs) a village southwest of Carbondale. By November 1855 the first portion had been completed and coal from the Jessup mines began to be transported over it in 1856. Legend had it that Mexican President Santa Anna intended to establish a colony of Mexican laborers at Jessup to mine coal, but the depression of 1857 caused the railroad to collapse. The line was abandoned with only the first phase having been completed. In 1874 the Delaware, Lackawanna and Western Railroad acquired the old roadbed and established its Winton Branch on that right-of-way.[16]

D. Central Railroad of New Jersey

The Central Railroad of New Jersey came into existence in 1849 with the consolidation of two small New Jersey railroads--the Elizabethtown and Somerville Railroad and the Somerville and Easton Railroad. It remained a New Jersey freight and passenger concern until 1866 when it entered Pennsylvania because of a desire by the management to become an anthracite coal carrier. The Pennsylvania addition consisted of a lease of the Lehigh and Susquehanna Railroad whose tracks ran from Easton on the New Jersey border northwestward to Wilkes-Barre. Just prior to the lease, the Lehigh and Susquehanna had taken a twenty-year lease on the newly built Union Coal Company line between Wilkes-Barre and Scranton. As a result, the Central Railroad of New Jersey acquired the twenty-year lease from the Lehigh and Susquehanna. This included a small wooden depot in Scranton, which was located at the end of Bridge Street.[17]

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15. "A Shattered Dream," *The Lackawanna Historical Society* 2 (November-December, 1967); *Scranton Times*, June 15, 1967.

16. Executive Committee of the Lackawanna Coal and Railroad Company to the Stockholders, October 22, 1855, in the Lackawanna Historical Society, Scranton, Pennsylvania; "A Shattered Dream;" *Scranton Times*, June 15, 1967.

17. Saylor, *The Railroads of Pennsylvania*, 37; Hitchcock, *History of Scranton and Its People*, I:113;Murphy, *Jubilee History*, I:106.

For a short time in the 1880s the Central Railroad of New Jersey lost its access to Scranton. When the company's twenty-year lease of the old Union Coal Company tracks expired in 1886, the Delaware and Hudson company obtained the line. As a result, the Central Railroad of New Jersey owners built their own line between Wilkes-Barre and Scranton, which paralleled its former one. When completed on May 1, 1888, the tracks, like its former leased route, entered Scranton by following the Lackawanna River. The company constructed a new station on the west side of the Lackawanna Avenue bridge. That depot burned on December 18, 1910, and another structure replaced it in 1914. The 1914 depot still stands.[18]

The Central Railroad of New Jersey added few miles of track in Pennsylvania after 1888. Through its connections with the Reading Railroad, it did offer the Scranton area the most direct connection to Philadelphia. All the other steam railroads that served Scranton had more direct ties with New York and New Jersey. By 1901 the Reading Company as the parent company for the Reading Railroad purchased a controlling interest in the Central Railroad of New Jersey. Although the two lines continued to operate independently, close cooperation existed until the two concerns merged into Conrail in 1976.[19]

Until the 1930s the Central Railroad of New Jersey prospered with its major source of income from anthracite coal. The company's track mileage reached a high of 711 miles. In the 1930s, however, the depression brought financial problems and the railroad entered receivership in 1939 for a period of ten years. After its reorganization in 1949, the company continued to face financial problems. Its operating mileage slipped to 576. Finally, in the early 1970s it returned to bankruptcy and became a part of the Conrail system in 1976. Its trackage in the Scranton area was abandoned at that time.[20]

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18. Hitchcock, *History of Scranton and Its People,* I:113; Murphy, *Jubilee History,* I:106; Craft, et al., *History of Scranton,* 356; Saylor, *The Railroads of Pennsylvania,* 38.

19. Saylor, *The Railroads of Pennsylvania,* 38-39.

20. Saylor, *The Railroads of Pennsylvania,* 39, 43-44.

E. New York, Ontario and Western Railroad

The New York, Ontario and Western Railroad was the last of the steam railroads to enter Scranton. This line had its beginnings in New York to fill the need for better transportation in the territory between the areas served by the Erie Railroad and the New York Central Railroad. Incorporated on January 11, 1866 as the New York and Oswego Midland, its route ran from the New York City area across a corner of New Jersey and on a diagonal line to Oswego, New York, on Lake Ontario. The track construction proceeded slowly after the award of the first contract in June 1868. It was not completed until July 10, 1873. An agreement with the New Jersey Midland allowed the New York and Oswego Midland access across New Jersey.[21]

Upon completion of its track, the New York and Oswego Midland suffered a setback. The depression in 1873 forced it into bankruptcy. It remained in receivership until it ceased operation on February 27, 1875. Reorganized, the line began to function again in thirty days. Unfortunately, there was little industry along its route. Even the passenger traffic was mostly local. Business, however, began to increase in 1876. Milk traffic with the upstate New York dairies, which had been instituted earlier, began to flourish. By 1877 the New York and Oswego Midland was the only line to run regular milk trains to New York City. The company also began to run strawberry trains between Oswego and New York City in the summer.[22]

Even though the New York and Oswego Midland operated under more favorable circumstances by the late 1870s, the owners obviously saw that it had limited potential for financial return. The area served by the railroad lacked the economic basis for any sustained growth. Even its port at Oswego on Lake Ontario suffered in the competition with the port at Buffalo, New York, on Lake Erie. As a result, the owners sold the New York and Oswego Midland Railroad on November 14, 1879 to a group that consisted mainly of British investors. The new owners changed the railroad's name to New York, Ontario and Western Railway. The use of the term railway was used in Great Britain while the word railroad was used in the United States.[23]

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21. William F. Helmer, *O.&W.: The Long Life and Slow Death of the New York, Ontario & Western Railway* (Berkeley: Howell-North, 1959), 2-10, 21.

22. Helmer, *O.&W.*, 36-38, 43, 144.

23. *Ibid.*, 47.

The new managers sought to broaden their economic opportunities in the hope of receiving a greater financial return. In their first move, they severed ties with the New Jersey Midland. Since the number of Catskill resorts had greatly increased along the railroad's route, the new leadership decided in June 1880 to publish a vacationers' guide to attract more passengers. Then in 1883, the New York, Ontario and Western began a joint operation with the New York, West shore and Buffalo Railway. This situation opened an opportunity to become more involved in the lucrative freight shipments to and from the Buffalo port. Bad luck, however, seemed to stalk the railroad, for bankruptcy forced the West shore and Buffalo into receivership in June 1884. The New York Central intervened to purchase the West Shore and Buffalo and thus ended the New York, Ontario and Western's connection with the Buffalo port.[24]

For the remainder of the 1880s the New York, Ontario and Western owners contented themselves with a minimal return operation. It seemed that the railway's nickname "Old and Weary" had proved to be true. Then, in 1889, the owners implemented a plan to enter the anthracite coal district as the answer for their monetary difficulties. They completed a Scranton Branch for both freight and passenger service on June 30, 1890. It ran from the main line at Cadosia, New York to Carbondale and down through Jermyn, Archbald, Winton, Peckville, Olyphant, Dickson, and Providence into Scranton. A depot was established at the westerly end of the Lackawanna Avenue bridge in Scranton. At the same time, the NYO&W built a connection to the New York, New Haven and Hartford Railroad and thus opened its freight haulage to New England.[25]

Financial success finally came to the "Old and Weary." Its Scranton Division became the mainstay of the line with its coal freight. In 1899 the railway purchased the coal land held by the Lackawanna Iron and Steel Company on the eve of that concern's move from Scranton to Buffalo. Its success attracted the attention of the New York, New Haven and Hartford Railroad with the result that it purchased the majority of the N.Y.O.&W. stock in 1904.[26]

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24. Helmer, *O.&W.*, 48, 51, 56.

25. Helmer, *O.&W.*, 60, 64; Hitchcock, *History of Scranton and Its People,* I:114; Murphy, *Jubilee History,* I:107.

26. Helmer, *O.&W.*, 65, 95; Anthracite Coal Industry Commission, *Report of the Anthracite Coal Industry Commission* (Harrisburg: Murrelle Printing Co., 1938), 410.

Fortune again turned against the New York, Ontario and Western in the mid-1920s. On this occasion, the result would be its slow death. All traffic began to decline on the railway after 1925. The depression in the 1930s further weakened it. The coal on the land it owned in the Scranton area became exhausted. Then, in 1937, two of its three coal suppliers in the Lackawanna Valley ceased operation. This result caused the New York, Ontario and Western to file for bankruptcy on May 19, 1937. The line stumbled along in receivership until it ceased operation on March 29, 1957.[27]

F. Lackawanna and Wyoming Valley Railroad

The Lackawanna and Wyoming Valley Railroad or the Laurel Line, as it was more popularly called, was the first intercity electric railroad in the Scranton area. It grew out of a need to provide local service for passengers between Scranton and Wilkes-Barre beyond the slow, tiring ride offered by local trolley systems or the infrequent stops of the steam lines which focused on long distance service.

In 1900 several Scranton residents joined promoters from Philadelphia and New York City to develop an intercity transit system between Scranton and Wilkes-Barre. Intercity electric lines had become popular in the 1890s with the development of intercity electric trolley cars. Led by George Lee of Philadelphia the group explored the possibility of such a system. At first they evolved a plan to provide a link between the west and New England, as well as the valley towns, for passengers and freight. They sought to convince the Pennsylvania Railroad's Sunbury Line to deliver freight to them at Wilkes-Barre. From there the Laurel Line would ship it to Scranton for a connection to the New York, Ontario and Western, which, in turn, would haul it to the New York, New Haven and Hartford. The operators of those steam railroads chose to ignore the scheme since they had no reason to favor a small electric line.[28]

George Westinghouse heard of the proposal to build an interurban electric line between Scranton and Wilkes-Barre. In mid-1901 he approached the promoters and offered to bid on the engineering, construction, and equipment. Westinghouse even invested in the endeavor. Through his influence, it was decided to use a third rail system because it would

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27. Helmer, *O.&W.*, 124, 133, 136, 166; Saylor, *The Railroads of Pennsylvania*, 8.

28. James N.J. Henwood and John G. Muncie, *Laurel Line: An Anthracite Region Railway* (Glendale, Calif.: Interurban Press, 1986), 17-18.

save on feeder cables and substations. The company bought ninety-eight acres of land along Roaring Brook in Scranton from the Lackawanna Iron and Steel Company. It had a 1,000 foot frontage on Mattes Street. The double track, as planned, ran from Scranton for one mile southeast where a short branch from Dunmore joined the main line. Continuing onward the track rose on the four percent grade of Moosic Mountain and entered Moosic. From that point it passed through Avoca, Dupont, and Pittston. In its last seven miles to Wilkes-Barre, it also connected with Inkerman, Hilldale, and Hancock. Regular service began on the first section between Scranton and Pittston on May 20, 1903. The twenty-four mile round trip took fifty minutes. By September 15, service was extended to Hancock and soon thereafter the Laurel Line was complete to Wilkes-Barre. Since the four percent grade over Moosic Mountain slowed the service, the owners planned a tunnel under Crown Avenue in south Scranton to overcome the incline. Work began on the 4,750-foot tunnel on July 5, 1904. It opened for service on October 19, 1905.[29]

Several parks were created along the Laurel Line route to attract riders. The first park opened in 1904 five miles south of Scranton at Rocky Glen. An artificial lake served as the main attraction, but soon an amusement park with rides was added. When the ridership to the park waned, the Laurel Line closed the amusement portion in 1913. Five years later the entire park closed. A second attraction, Luna Park, opened on the Linwood Park site along the Dunmore Branch in May 1906. Among its offerings were rides and a casino. Interest in this park also declined and Luna Park folded in 1916.[30]

Train ridership began to decline after 1924 as the popularity of automobiles increased. The Laurel Line, however, continued its passenger service until December 31, 1952. Freight was still hauled, but electric power ended on August 19, 1953, when the managers leased a diesel engine from the Delaware, Lackawanna and Western. The Lackawanna and Wyoming Valley Railroad came to an end on December 6, 1957, when the Interstate Commerce Commission gave the Delaware, Lackawanna and Western approval to purchase it. In 1961, one year after the DL&W and the Erie merged, the Erie Lackawanna abandoned the old Laurel Line track from the south side of Scranton to Inkerman. After 1976 Conrail discontinued using the track in the Wilkes-Barre area although it used the tunnel under Crown Avenue in Scranton until 1980. A small portion of

29. Henwood and Muncie, *Laurel Line,* 19, 23-24, 35, 43-44; Murphy, *Jubilee History,* I:108; Hitchcock, *History of Scranton and Its People,* I:114-115.

30. Henwood and Muncie, *Laurel Line,* 39-42.

abandoned right-of-way, from the site of the depot on Mattes Street going southeast along Roaring Brook, paralleled the Delaware, Lackawanna and Western track. That area also once contained the yard with its operation center of shops and powerhouse.[31]

G. Northern Electric Railway and the Scranton, Dunmore and Moosic Lake Railroad

Two other electric lines made connections with the Scranton area in the early twentieth century for basically passenger service. The Northern Electric line was organized in 1906 with the ambition to connect Scranton with Binghamton, New York. The first phase, which began at North Main Avenue and West Market Street in Scranton and ran to Nicholson, Pennsylvania, with a branch to Lake Winola, was soon completed. By 1914 the company reorganized as the Scranton and Binghamton Railroad and extended its track to Binghamton in that year. Ridership began to decline in the 1920s and the company succumbed to the depression of the 1930s.[32]

Little information remains of the Scranton, Dunmore and Moosic Lake Railroad. Two Delaware, Lackawanna and Western employees, John and Timothy Burke, organized the company at the turn of the century. The track ran from Dunmore to Moosic Lake. Its route paralleled present day Drinker Street on the north through Dunmore to Interstate 84. From Interstate 84, it ran along the north side of highway 435 to the point of its large curve around Roaring Brook before Elmhurst. There it angled northeast to Moosic Lake where an amusement park had been established. Its cars were originally propelled by a steam locomotive, but about 1910 the operation changed to electric power. The railroad did not prove to be a success and it was abandoned in March 1926.

Several railroads made connections with the Delaware, Lackawanna and Western Railroad outside of the Scranton area. Those with links along the line between Scranton and Slateford Junction included the following railroads.

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31. Henwood and Muncie, *Laurel Line,* 25, 99, 108, 153, 176, 181, 185-187.

32. Hitchcock, *History of Scranton and Its People,* I:125.

H. New York, Susquehanna and Western Railroad

The New York, Susquehanna and Western evolved from the New Jersey Midland Railway. The latter line was created on March 17, 1870 from four small New Jersey railroads. The owners' intent was to extend its tracks to the Pennsylvania coal fields. Before such construction could take place, the New Jersey Midland entered into a contract with the New York and Oswego to act as its carrier across New Jersey. Economic disruption caused by the 1873 depression resulted in bankruptcy for the New Jersey Midland on March 8, 1875. Relieved of receivership in May 1880, the line was sold and renamed Midland Railroad of New Jersey. The new directors, which included several coal mine owners in the Scranton and Pittston region, decided to extend the track into the Pennsylvania coal fields.[33]

The Midland managers created the Pennsylvania Midland Railroad to construct the track in that state. Before any Pennsylvania track was laid, the directors entered an agreement on January 1, 1881 with the Delaware, Lackawanna and Western to build the line only as far as Gravel Place about three miles above East Stroudsburg, Pennsylvania, where the two lines would connect. By this arrangement the DL&W would handle Midland traffic between Scranton and Gravel Place. As a result of this accord, the Midland managers decided to combine their several companies under the name New York, Susquehanna and Western Railroad. Incorporation papers were filed on June 17, 1881.[34]

The New York, Susquehanna and Western Railroad owners completed their track from Weehawken, New Jersey to Gravel Place, Pennsylvania on October 24, 1882. They built a bridge over the Delaware River north of the DL&W station at Delaware Water Gap. (The stone piers of this bridge still stand in the river.) Coal trains began to run the next day. Coal came from the Pennsylvania Anthracite Coal Company mines near Scranton as well as that mined by John Jermyn and the Lackawanna Coal Company.[35]

By the early 1890s the New York, Susquehanna and Western directors decided to build their own Pennsylvania road and sever ties with the Delaware, Lackawanna and

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33. Walter Arndt Lucas, *The History of the New York, Susquehanna and Western Railroad* (Roselle Park: Railroadians of America, 1939), 23, 49-50, 57, 67-69.

34. Lucas, *The History of the New York, Susquehanna and Western Railroad,* 73.

35. John C. Appel, Joan B. Groff, Joel Keller, Vertie Knepp, Reg Nauman, Thomas H. Knapp, and Edna Ponder, *History of Monroe County, Pennsylvania 1725-1976* (East Stroudsburg, Pa.: Pocono Hospital Auxiliary, 1976), 93; Lucas, *The History of the New york, Susquehanna and Western Railroad,* 85.

Western. As a result, they established a subsidiary called the Wilkes-Barre and Eastern Railroad and began to build a single track line between Wilkes-Barre and Stroudsburg. Upon completion on September 29, 1894, the NYS&W removed its track to Gravel Place and connected it to the Wilkes-Barre and Eastern line at Stroudsburg.[36]

Coal freight formed the chief source of income for the New York, Susquehanna and Western. From 1882 into the early twentieth century the line encouraged Monroe County, Pennsylvania farmers to enter into the dairy business. Its success was so great that by 1888 the NYS&W hauled more milk from that area than the Delaware, Lackawanna and Western. Beginning in 1898, the line promoted the vacation trade to the Stroudsburg area. Still, revenue from coal traffic provided the main source of income until the 1930s. Economic difficulties during that decade combined with a decline in the coal trade prompted the New York, Susquehanna and Western to abandon its Wilkes-Barre and Eastern subsidiary. The last train ran on March 25, 1939. In the following year, that railroad closed its line into Stroudsburg. The company still operates in other areas of Pennsylvania.[37]

I. Delaware Valley Railroad

This small railroad began operation in 1901. It operated from East Stroudsburg to Bushkill, a distance of about fourteen miles. The Delaware Valley used the Delaware, Lackawanna and Western tracks from East Stroudsburg to Milford Crossing where it had its own track to Bushkill. With no turntable or wye, the steam engine backed the train to Bushkill and then ran forward on its return to East Stroudsburg. The railroad also served the intervening communities and hauled passengers to the various hotels and resorts along the route. It ended its passenger traffic in 1929 and freight operation in 1938.[38]

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36. Lucas, *The History of the New York, Susquehanna and Western Railroad,* 100.

37. Lucas, *The History of the New York, Susquehanna and Western Railroad,* 112, 115; Appel, et al., *History of Monroe County,* 165; John C. Appel, "When the NYS&W came to Stroudsburg" (address presented at LaBar Village, March 9, 1989 (typescript in the Monroe County Historical Society, Stroudsburg, Pennsylvania), 10.

38. Mr. and Mrs. Nathan G. Meyers, "Railroads of Monroe County" (typescript in the Monroe County Historical Society, April 1975), 5-6.

J. Pennsylvania Railroad

The future entrée for the Pennsylvania Railroad into northeastern Pennsylvania was established in April 1872 when the line's management acquired the Belvidere Delaware Railroad. Completed in 1864, the Belvidere Delaware ran between the Pennsylvania Railroad in Trenton and Manunka Chunk, New Jersey. At the latter town it connected with the Delaware, Lackawanna and Western. Passengers wishing to proceed to the Delaware Water Gap area and beyond had to transfer from the Pennsylvania Railroad to the DL&W. As the Water Gap area attracted more summer visitors by the latter 1890s, the Pennsylvania Railroad reached an agreement that permitted it to use 17.75 miles of DL&W track between Manunka Chunk and East Stroudsburg. By this arrangement, East Stroudsburg had a direct connection with Philadelphia. This accord was extended in 1913 to allow the Pennsylvania Railroad to run a weekend passenger train during the summer vacation season as far as Tobyhanna. Thus the Philadelphia tourists had more direct connections to the Water Gap and Pocono Mountain hotels and resorts. The Pennsylvania Railroad continued its service until 1947. By that date ridership had dropped to the point that the run lost money.[39]

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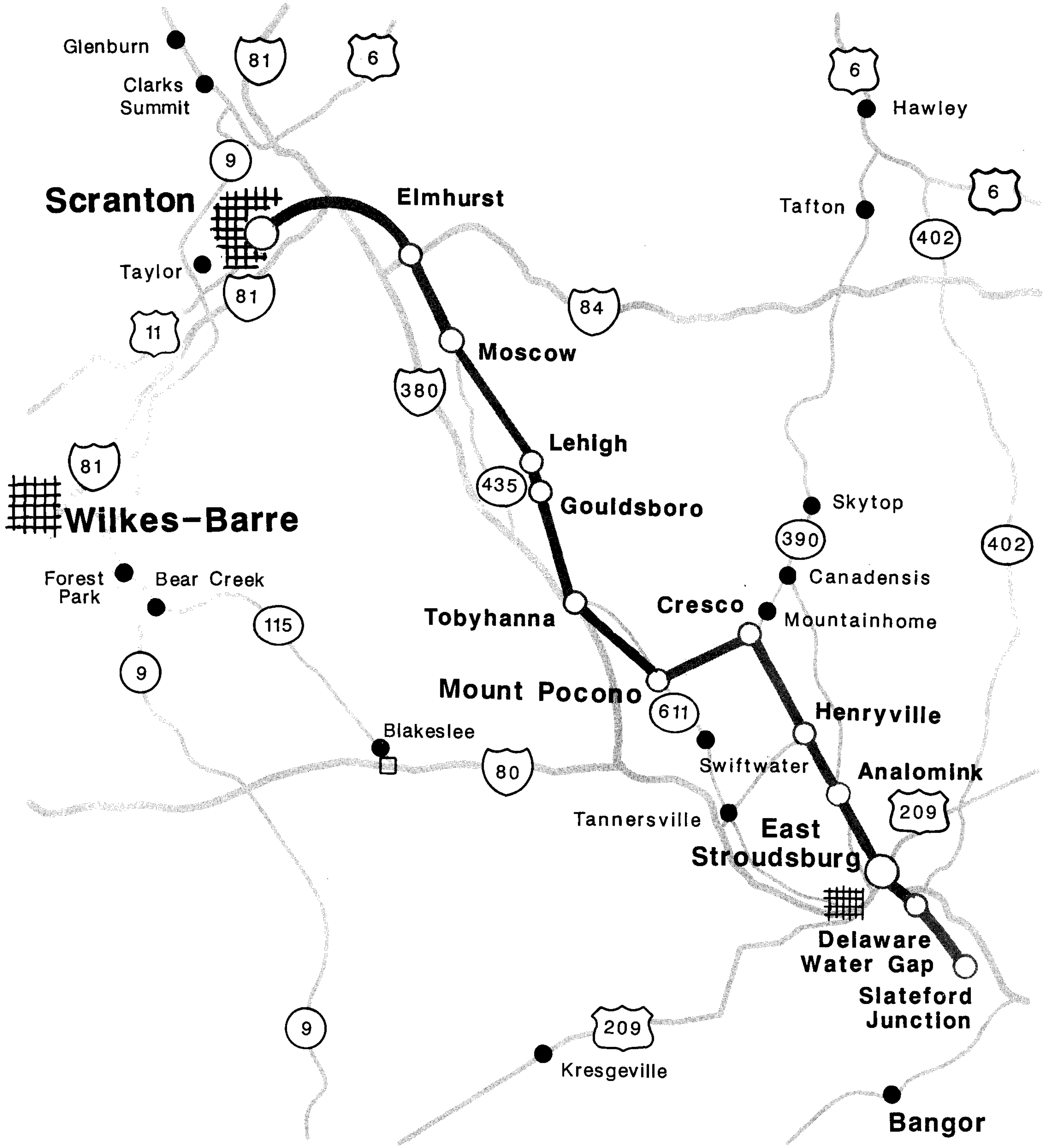
39. William Bender Wilson, *History of the Pennsylvania Railroad Company with Plan of Organization, Portraits of Officials and Biographical Sketches* (Philadelphia: Henry T. Coates & Co., 1899), I:226-227; Peggy Bancroft, *Ringing Axes and Rocking Chairs: The Story of Barrett Township* (Mountainhome, Pa.: Barrett Friendly Library, 1974), 111; William C. McFadden, "A History of the Resort Industry at the Delaware Water Gap" (Delaware Water Gap National Recreation Area, Pennsylvania, March 18, 1970), 36, 60, 109.



Vicinity

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service
DSC/APR'90/903/20018

CHAPTER 2

THE DELAWARE, LACKAWANNA AND WESTERN RAILROAD ROUTE FROM SCRANTON TO SLATEFORD JUNCTION

The realization that their iron smelting business in Scranton required adequate transportation to support it, if it were to survive, prompted Seldon and George Scranton to plan to build a steam railroad line in 1849. Their first objective called for developing a line to the north from Scranton to make it possible to deliver rails to the Erie Railroad. At the same time, the Scrantons acquired the Delaware and Cobb's Gap Railroad right-of-way, which ran from Scranton to the southeast past Slateford Junction to the Delaware River. Construction of this southern division, as it was called, began in June 1852, about a year after the northern division had been completed. It was finished on May 27, 1856.[1]

A. Southern Division Construction

Railroad track construction required extensive preparatory work. Since the Scrantons acquired the right-of-way of the unconstructed Delaware and Cobb's Gap Railroad, they were relieved of the need to make a reconnaissance survey to establish a route. This situation, however, did not eliminate the need for a survey party to cover the ground. This group consisted of a flagman with a corps of axmen who preceded and cut trees and brush. They were followed by a transitman who, with assistance from chainmen, recorded distance and angles of the line. Next came a leveller with rodmen to record levels. Upon completion of these tasks, the route was registered on a map and then it was staked. Specifications for all line work including bridges and culverts were established. Finally, the line was divided into sections and contracts were awarded for each area. One segment of the line, however, did not follow the Old Delaware and Cobb's Gap right-of-way. The owner of the land on the west side of Brodhead Creek just above Stroudsburg asked a price that was felt to be too high for the right-of-way. As a result, the Scrantons decided to run the line along the east side of Brodhead Creek into East Stroudsburg.[2]

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1. Henry Poor, *History of the Railroads and Canals* (N.Y.: J.H. Schultz & Co., 1860), 435.

2. Thomas Curtis Clarke, "The Building of a Railway," in Thomas Curtis Clarke, John Bogart, M.N. Forney, E.P. Alexander, H.G. Prout, Horace Porter, Theodore Voorhees, Benjamin North, Arthur T. Hadley, Thomas L. James, Charles Francis Adams, and B.B. Adams, *The American Railway: Its Construction, Development, Management, and Appliances* (N.Y.: Charles Scribner's Sons, 1889), 13-21; Thomas Townsend Tabor, *The Delaware, Lackawanna and Western Railroad: The Road of Anthracite in the Nineteenth Century 1828-1899* (Muncy, Pa.: Lycoming Printing Co., 1977), 158.

Construction of the southern division through a semi-isolated, mostly mountainous area required much effort with the primitive equipment of the day. The rough and irregular terrain presented by the Moosic and Pocono Mountains meant excavating many cuts and filling many low areas to provide an adequate roadbed. The soil consisted mostly of Wisconsin drift, which tended to be rocky. Clay in rather thin layers generally formed the subsoil overlying such rock as shale, slate, sandstone, and limestone. Low pockets generally held water that formed swamps. The area tended to be heavily wooded with the most prominent trees in the first half of the route from Scranton being beech, hemlock, maple, and pine. Chestnut, oak, hemlock, and pine covered much of the remaining area. In the Scranton area Roaring Brook served as a major watershed. It, in turn, was succeeded by the Lehigh River about half way to Slateford Junction. Finally, Brodhead Creek formed a major drainage in the last segment of the line. Four creeks formed minor waterways. All of these drainage systems required numerous bridges and culverts.[3]

The Scrantons planned a single track line on the fifty-nine miles between Scranton and Slateford Junction. In addition to leveling the undulating terrain with cuts and fill, the route required two tunnels. One tunnel of 762 feet was driven at Nay Aug near Scranton. Completed on May 15, 1856, its rock composition had sufficient strength that it was never lined. The other tunnel of approximately 500 feet, sometimes called Pocono Tunnel and other times termed Paradise Tunnel, was northwest of Cresco at mile 99 in the Paradise Valley area. It, too, was not lined. By 1857, however, rock began to fall from the roof in such quantity that the tunnel's interior was lined with brick. Masonry facades were also added at the entrances. In 1903 the Paradise tunnel was removed and it became a cut.[4]

When a section had been leveled, the roadbed was prepared for the track. The Delaware, Lackawanna and Western roadbed was 14 feet 1-1/2 inches wide. In a cut the roadbed extended to 19 feet 1-1/2 inches to protect against rock or earth slides. Ditches

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3. Engineering Report Upon Delaware, Lackawanna and Western Railroad, Volume I, Inventory as of June 30, 1918 – Revised June 30, 1926, Division of Evaluation, Record Group 134, Records of the Interstate Commerce Commission, Suitland Branch of the National Archives (hereafter cited as ICC); G. Ellis Miller, "Drinker's Beech" *Shopper's Guide and News* (Moscow, Pennsylvania), August 25, 1966; Alfred Mathews, *History of Wayne, Pike and Monroe Counties, Pennsylvania* (Philadelphia: R.T. Peck & Co., 1886), 327; Robert B. Keller, *History of Monroe County Pennsylvania* (Stroudsburg, Pa.: The Monroe Publishing Co., 1927), 377.

4. Murphy, *Jubilee History,* I:101; Engineering report Upon Delaware, Lackawanna and Western Railroad, Volume I, Inventory as of June 30, 1918 – Revised June 30, 1926, ICC; Pocono Tunnel Repair, 1857, Southern Division: Application of Changes to Construction, Additions, and Betterments 1854-1882, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, George Arents Research Library, University of Syracuse, Syracuse, New York (hereafter cited as GARL).

on each side for drainage were up to two feet deep. It was possible that no ballast was originally placed on the roadbed, for the northern division, built earlier, had no ballast. The term ballast, as the gravel or crushed rock placed on a roadbed was called, originated in England. A main source of this material in England was the gravel used by ships for ballast. If ballast were not used on the roadbed initially, it soon was placed there because the DL&W line did have cinder, gravel, and broken stone ballast in the 1850s.[5]

Wood for construction was obtained locally from several saw mills established near the railroad route along the Lehigh River. Timber was used for ties, bridges, water towers, and stations. Hemlock was the favored wood for ties although it was neither hard nor durable. It was less expensive than other woods. Crossties were not treated and would not be treated with a preservative by the DL&W for over fifty more years. As a result, untreated hemlock ties had an average life of four years. Wooden water tanks built on stone piers were located at Greenville (Nay Aug), Dunnings (Elmhurst), Moscow, Lehigh Summit, Tobyhanna, Paradise, Oakland (Cresco), Henryville, and East Stroudsburg. Wooden truss bridges spanned the waterways. These structures employed a Howe truss system. With this method of construction, screws and nuts were used for adjustment to take into account the shrinkage of wood. Howe truss bridges also had the parts concentrated in such a way that they could bear a heavy concentration of weight. Finally, wooden stations were built at Greenville (Nay Aug), Dunnings (Elmhurst), Moscow, Lehigh Summit, Sand Cut (Gouldsboro), Tobyhanna, Pocono, Forks (Mount Pocono), Paradise, Oakland (Cresco), Henryville, Spragueville (Analomink), East Stroudsburg, and Water Gap.[6]

The Delaware, Lackawanna and Western rails in the 1850s were laid in a primitive fashion. These fifty-six pounds-per-yard iron rails were spiked directly to the hemlock crossties on a six-foot gauge. No tie plates were used under the rails to help prevent a tie injury such as cutting of the ties. These early iron T rails stood four to four and one-half inches high. They had a thin head and thick base. The quality of the iron was poor, which caused the rails to frequently crack and the top of the head to flake off. Rails were thirty feet long and supported by sixteen crossties. The ends were not bolted together with splice

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5. William C. Willard, *Maintenance of Way and Structures* (N.Y.: McGraw-Hill Book Co., 1915), 30; Ballast, 1850s, Southern Division: Application of Changes to Construction, Additions, and Betterments 1854-1882, GARL.

6. Tabor, *The Delaware, Lackawanna & Western Railroad,* 152; Murphy, *Jubilee History,* I:536; Water Stations, 1856, Southern Division: Application of Changes to Construction, Additions, and Betterments 1854-1882, GARL; Clarke, "The Building of a Railway," 27; Freight and Passenger Stations, 1854, Southern Division: Applications of Changes to Construction, Additions, and Betterments 1854-1882, GARL.

bars. Instead, the rails ends were held in alignment by resting them on cast iron chairs that had been spiked to heavier ties. It was not long, however, before splice bars were used to join the rail sections.[7]

B. Line Improvements

Soon after completing the southern division, the Delaware, Lackawanna and Western leadership decided to add a second track on the line. The first segment of track was completed between Scranton and Nay Aug in 1859. It was extended for the rest of the line between 1863 and 1868. As each segment was double-tracked, the wooden truss bridges were replaced with stone arched bridges. A distance of thirteen feet was used between the two track centers. As a result, the double track roadbed had a width of forty-one feet, three inches.[8]

Operating a railroad brought experience and improvements. The short life of hemlock crossties led the company to select chestnut and oak for replacements by the 1860s. These new crossties reduced replacement needs by half, but rot still served as the major cause for replacement as opposed to rail cuts in crossties caused by the weight of trains. Crossties on curves failed more often because they were under greater stress. Attempts were made to alleviate curve stress on both ties and rails. Centrifugal force encountered on curves increased wheel flange pressure on the outer rail bringing excessive wear to the rail and abnormal cutting to the crosstie. The answer to the problem came in raising or superelevating the outer rail on a curve. On level areas the outer rail was usually raised one inch per degree of the curve to a maximum height of six inches. In hilly areas, the outer rail was not elevated as much as on level areas. Going into and out of a curve the outer rail was usually raised one inch per sixty feet. Slower freight trains required a less elevated outer rail than the faster passenger trains.[9]

Several safety features were introduced by the latter quarter of the nineteenth century. Inner and outer guard rails came into use on all bridges. An inner guard rail

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7. Tabor, *The Delaware, Lackawanna & Western Railroad,* 152; Willard, *Maintenance of Way and Structures,* 70, 128-129; "Rail Statistics" *Railway Age* 31 (March 15, 1901), 336.

8. Second Tack, 1859-1868, Southern Division: Application of Changes to Construction, Additions, and Betterments 1854-1882, GARL; Willard, *Maintenance of Way and Structures,* 30.

9. W.M. Camp, "Curve Elevation," *Railway Age* 31 (March 15, 1901), 308.

consisted of two rails placed inside of the track rails and curved to meet in a point at either end of a bridge. Its function was to guide derailed wheels in a straight line until the train stopped and thus prevent a train from plunging off a bridge. Outer guard rails served the same purpose. They were usually five by eight-inch sawed timbers bolted to the edge of the ties on either side of the bridge track. Better rail anchors came into use by the turn of the century. These anchors served to prevent rail creep, which resulted from the wave motion caused by a train or from continued braking on grades and at stations. Over time, creeping could cause rails to bend laterally or vertically as well as jam switches. The earliest solution to the problem proved bothersome because holes had to be drilled into the rail base after it was set in place and spikes driven through the holes into the crossties. This anticreep method was supplanted by a wedge type anchor still in use today. The one piece wedge anchor hooked under the rail base and wedged against a crosstie.[10]

As president of the Delaware, Lackawanna and Western from 1868 to 1899, Samuel Sloan believed in short trains, light cars, and small locomotives. Because of this lighter equipment, it was not necessary to invest periodically in heavier rails. Management kept the fifty-six pounds per yard iron rails for many years. Steel rails undoubtedly came into use in 1876 at the time the rail gauge was switched from its original six-foot gauge to the standard four-foot eight and one-half inch gauge. The DL&W laid its original track with a six-foot gauge because the Erie Railroad, to which it joined at Great Bend (Hallstead), Pennsylvania, used that gauge. At the time, it proved the most efficient approach. As the nation's railroads integrated after the Civil War by using a standard four-foot eight and one-half inch gauge, effective operation dictated that the DL&W convert to the standard. New rails were laid inside the existing wider gauge. After completing the new track, railroad employees changed the locomotive and rolling stock wheel gauge in one day. It was possible that the new steel rails weighed sixty pounds per yard. At the time Sloan left office in 1899 most DL&W track still contained sixty pounds per yard rails while most other railroads had installed eighty pounds per yard rails.[11]

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10. Willard, *Maintenance of Way and Structures*, 187-189, 193; E.P. Alexander, "Railway Management," in Clarke, et al., *The American Railways*, 221.

11. "The Newark Improvements of the Lackawanna Railroad – I," *The Engineering Record* 48 (December 26, 1903), 806; Thomas T. Tabor, *The Delaware, Lackawanna & Western Railroad: The Route of Phoebe Snow in the Twentieth Century 1899-1960*, Part I (Williamsport, Pa.: Lycoming Printing Co., 1980), 17; George Rogers Taylor and Irene D. Neu, *The American Railroad Network, 1861-1890* (Cambridge: Harvard University Press, 1956), 77.

C. The Twentieth Century

The development of the Delaware, Lackawanna and Western Railroad into a modern, efficient operation began in 1899 when William Truesdale became president. Truesdale totally rebuilt the railroad from top to bottom. As a result, the line from Scranton to Slateford Junction reflects his touch to this day. Truesdale began a policy to decrease transportation costs by using heavier locomotives and cars. To achieve this end meant countering nearly all of his predecessor's management principles. Heavier equipment meant bolstering the line to withstand the new increased weight. All of the old, light stone masonry bridges were replaced. Not only were all of the bridges replaced, but also most of the culverts. In addition bridges were used to eliminate many grade crossings.

President Truesdale departed from the usual Eastern railroad construction practices for bridges and culverts by adopting concrete as the building material. B.H. Davis was the first DL&W engineer in charge of concrete design. Chief Engineer Lincoln Bush oversaw much of the bridge construction. Most of these structures were built by day labor. Old rails were used as reinforcement steel. At first, concrete was used only for abutments with the span comprised of deck plate steel (figures 1 and 2). Within a couple of years all-concrete bridges and culverts began to appear. The concrete semi-circular arch was the typical style for bridges over minor streams and rural highways (figures 3 and 4). An elliptical concrete arch was used in some areas where more vertical clearance was needed (figure 5). In populated areas, concrete bridges were used to eliminate grade crossings. Tracks were elevated over a street by using a double span flat top or concrete slab bridge (figure 6). Rivulets typically were spanned by arched or box concrete culverts (figures 7 and 8).[12]

For the entire line, President Truesdale had 181 new stations and freight depots built. A variety of building materials were used including brick, wood frame, and concrete. Of those remaining stations and freight depots along the route between Scranton and Slateford Junction built during Truesdale's time, each of the above styles are represented. The Water Gap station and freight depot built in 1903 and the Moscow station constructed in 1904 are brick (figures 9, 10, and 11). The Moscow freight depot, also 1904, and the 1907 Gouldsboro and 1908 Tobyhanna stations were wood frame structures (figures 12, 13,

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12. "D.L.&W. Directors Review Truesdale Administration," *Railway Age* 79 (July 4, 1925), 46; M. Hirschthal, "Development of Concrete in Railway Construction: A Review of the Steps in the Adoption of this Material on the Delaware, Lackawanna & Western," *Railway Age* 73 (October 14 and 28, 1922), 705-706, 791; "Delaware, Lackawanna & Western," *Railway Age* 31 (March 1, 1901), 158; "The Newark Improvements of the Lackawanna Railroad – I," 806.

Figure 1
May 1989

Bridge 73, A Deck Plate Girder Bridge Over Drinker's Highway at Mile 108.37

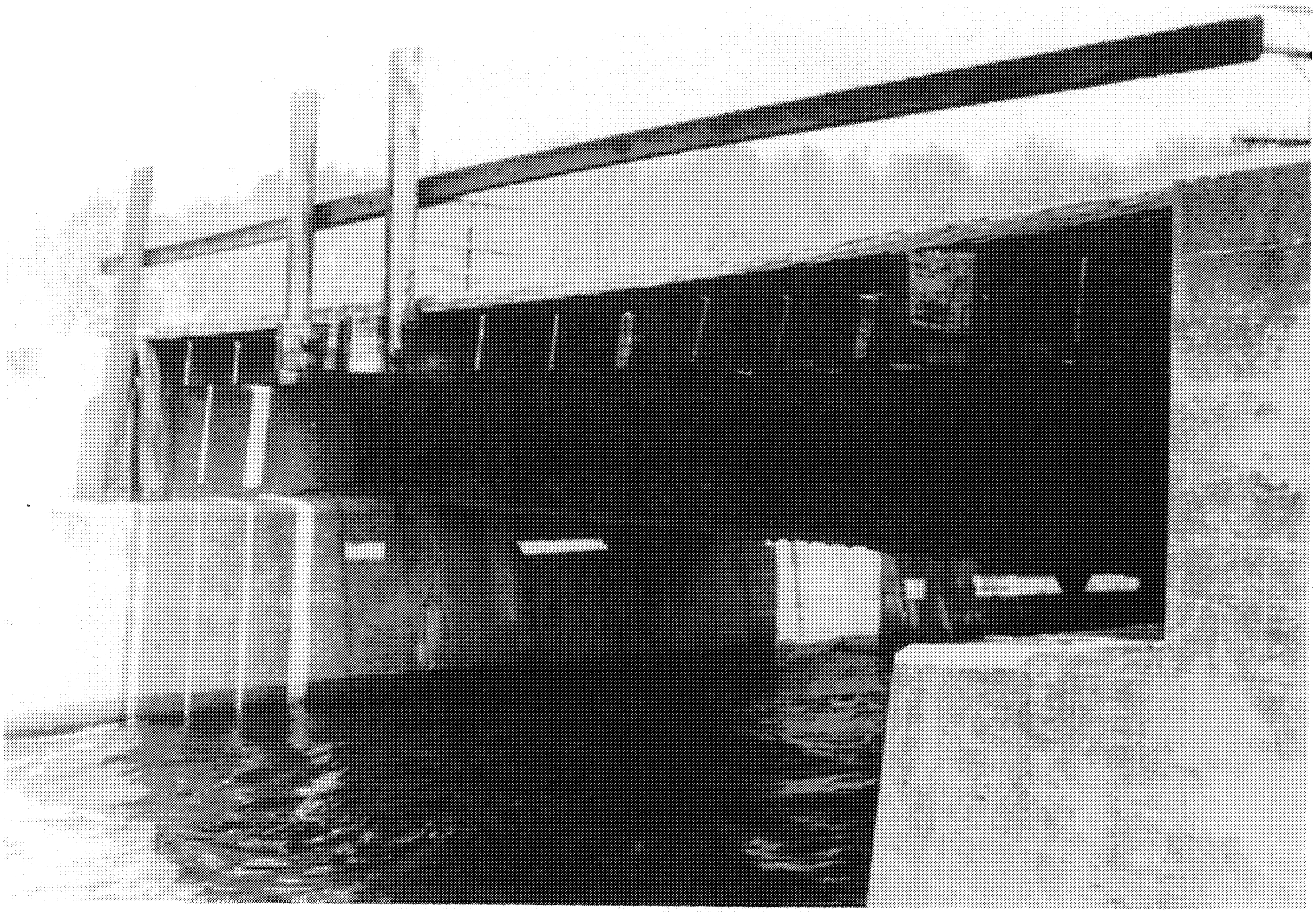

Figure 2
May 1989

Bridge 72, A Deck Plate Girder Bridge Over the Lehigh River at Mile 113.50

Figure 3
May 1989

Concrete Arch Bridge Over Creamery Creek at Moscow at Mile 120.42

Figure 4
May 1989

Double Concrete Arch Bridge Over Highway 191 and Paradise Creek between Analomink and Henryville at Mile 87.42

Figure 5
May 1989

Bridge 75, A Concrete Elliptical Bridge Over Tobyhanna Creek at Mile 107.39

Figure 6
May 1989

Concrete Slab Bridge Over Highway 435 in Moscow at Mile 120.47. It was constructed to replace a grade crossing.

Figure 7
May 1989

Concrete Arch Culvert Over Roaring Brook at Mile 127.03

Figure 8
May 1989

Concrete Box Culvert Over Roaring Brook at Mile 115.36

Figure 9
Ca. 1903
Delaware Water Gap Passenger Station
Courtesy of the Monroe County Historical Society
Stroudsburg, Pennsylvania

Photograph of the Delaware Water Gap Passenger Station taken from a postcard made soon after the station's construction in 1903.

Figure 10
May 1989

A present day photograph of the Delaware Water Gap Passenger Station. This brick building has greatly deteriorated. The brick freight depot appears at the end of the passenger station to the right. It, too, has suffered structural deterioration.

Figure 11
May 1989

The Moscow Passenger Station. Constructed of brick in 1904, it remains structurally sound. The roof has had modern asphalt shingles added. It was rehabilitated by the city of Scranton in 1988.

Figure 12
May 1989

The Moscow Freight Depot. This wood frame building was also constructed in 1904. It has deteriorated since abandonment.

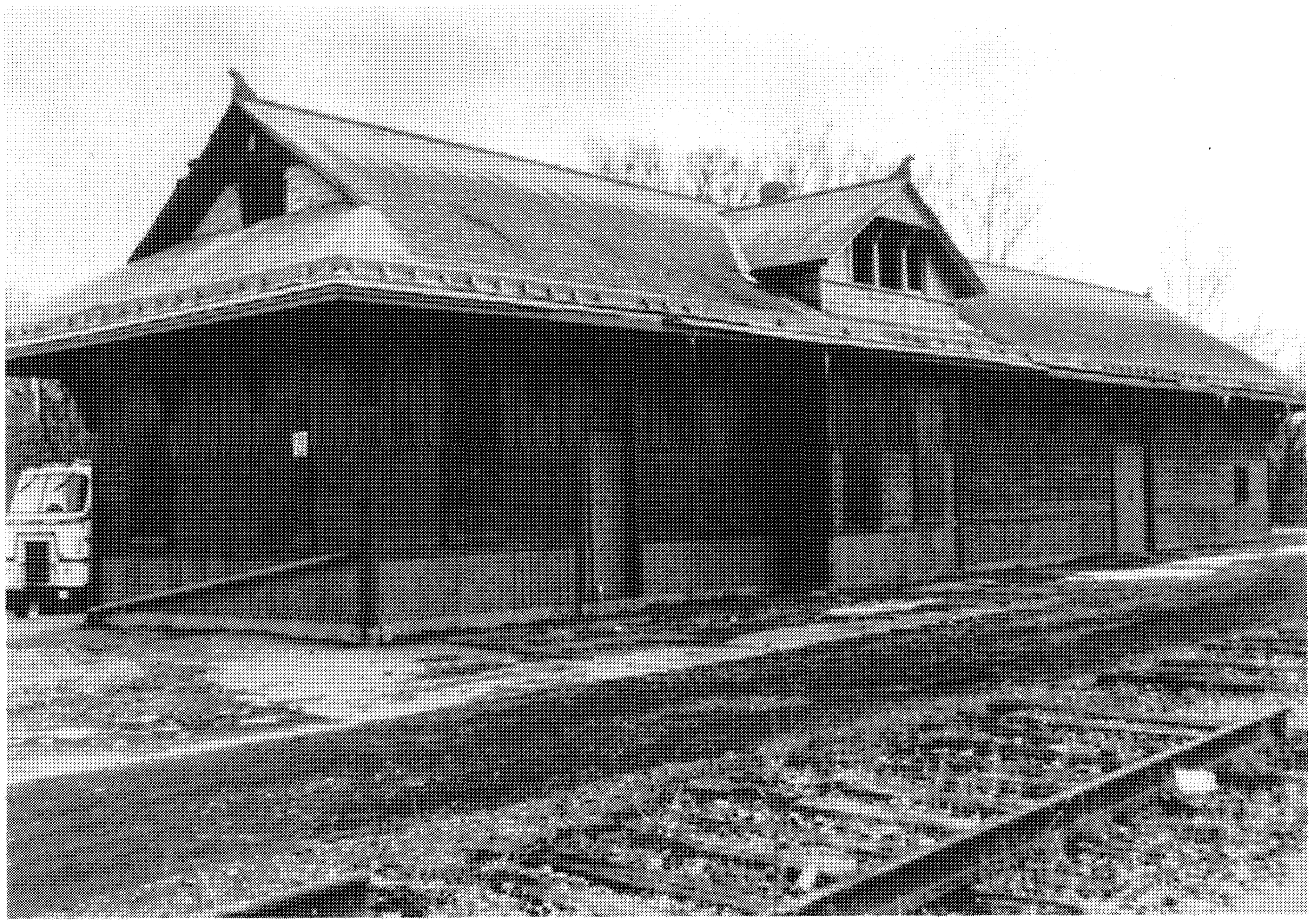

Figure 13
February 1989

The Gouldsboro Combination Passenger Station and Freight Depot. This wood frame building was erected in 1907.

Figure 14
May 1989

The Tobyhanna Combination Passenger Station and Freight Depot. This wood frame building was constructed in 1908.

and 14). The Pocono Summit station, built in 1911, demonstrated the adaptability of concrete to the architectural treatment required by this type of structure (figure 15).[13]

In addition to new bridges and culverts, the entire roadbed and track were rehabilitated. In 1899 Truesdale began to have the old sixty pounds per yard rails replaced with ones of eighty pounds per yard to accommodate the weight of the new equipment. The standard length of these new rails increased to thirty-three feet from thirty feet. The use of these longer rails reduced the number of joints and thus promoted fewer maintenance problems. Rails for the most part were still laid directly on untreated crossties of mostly chestnut and some oak. Only 5.5 percent of the rails in 1901 had steel tie plates inserted between them and the crossties. The use of tie plates in any large amount did not begin until the general use of treated ties.[14]

The Delaware, Lackawanna and Western did not begin to use treated ties until 1910. Previously, ties had been so abundant and low in price that there was little inducement to prolong crosstie life with chemical preservatives. Toward the end of the first decade of the twentieth century, tie availability dwindled. The resultant price increase promoted greater use of wood preservatives. Although a zinc chloride solution served as an early chemical treatment, creosote soon predominated. Creosote, a by-product of the distillation of coal tar, was injected in ties under pressure in a closed retort. In 1909 the Delaware, Lackawanna and Western managers established a creosote treatment plant in Paterson, New Jersey and, in the following year, began the general use of treated crossties on the line. Creosote increased the life of ties to twenty years or more. The Delaware, Lackawanna and Western did not immediately remove all of its untreated crossties, but instead replaced only the rotted ones each year. By 1918, seventy-two percent of the main line had received creosoted ties. Their prevailing size was seven by nine inches and eight feet, six inches long. Ties were dated with the year that they were placed in the line. The earliest nineteenth century dating method was to cut a notch in the upper edge of a tie in a certain position to indicate the year. By 1875 some railroads stamped or branded a tie with a die or sledge. Around the turn of the century date nails came into use. These were

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13. "D.L.&W. Directors Review Truesdale Administration," 46; Hirschthal, "Development of Concrete in Railway Constructions," 844.

14. Delaware, Lackawanna and Western Railroad Company, *Annual Report of the Delaware, Lackawanna and Western Railroad Company For the Year Ending December 31, 1899* (N.Y.: Sears & White, 1900), 7; Engineering Report Upon Delaware, Lackawanna and Western Railroad, Volume I, Inventory as of June 30, 1918 – Revised June 30, 1926, ICC; "Ties," *Railway Age* 31 (March 15, 1901), 345.

Figure 15
May 1989

The Pocono Summit Passenger Station. Built in 1911 of concrete, this station exhibits the uses which the Delaware, Lackawanna and Western made of concrete. It was rehabilitated by private funds in 1987.

two and a half inch long galvanized nails that had a five-eighths inch head that carried the last two numbers of the date. These nails were driven into the upper surface of the tie midway between the rails.[15]

The increased longevity of treated crossties caused the general use of tie plates. In the past, when rails were placed directly on untreated ties, the crossties usually rotted before the rail could cut or damage the tie. The longer life of creosoted ties placed them in danger of rail damage. To prevent such damage a steel plate, called a tie plate, was placed between the rail and the tie. With the adoption of creosote crossties, the Delaware, Lackawanna and Western officials chose the Wolhaupter shoulder, flat-bottom tie plate to place on the ties. Instead of using conventional nail spikes to hold the tie plate in place, the DL&W engineers selected a steel screw spike. Unlike the common or nail spike that was driven into a crosstie, the screw spike was turned into the tie with a wrench. It had greater holding power, but if it worked loose, the screw spike tended to damage the crosstie. This type of tie plate and screw spike was used on the DL&W line until about 1925.[16]

By 1901 President Truesdale decided to add a third track on the line's heavy grades for use by slow freight trains. Such a track meant that slow freights would no longer be delayed on sidings while waiting for faster trains to pass. Since the area between Scranton and East Stroudsburg contained heavy grades the entire route except for eight miles received a third track between 1902 and 1912. A third track meant the construction of a second Nay Aug tunnel near Scranton because the 1856 tunnel accommodated only two tracks. Inasmuch as a main road between Scranton and Elmhurst crossed the land over the tunnel, DL&W personnel undoubtedly decided not to eliminate the tunnel in favor of a cut. This new tunnel was completed in 1906 (figures 16 and 17). Like the first tunnel, the second one was unlined. Concrete portals were added to both tunnels on the west end (figure 18). In 1903 the Paradise tunnel was removed to form a cut. Since earth slides persisted in the cut, in 1942 the track was routed around the face of the mountain. As the third track was installed, railroad construction engineers used the opportunity to realign the

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15. "Wood-Preservers' Association Meets at Chicago," *Railway Age* 68 (February 13, 1920), 491; "Ties," *Railway Age* 31 (March 15, 1901), 341; Willard, *Maintenance of Way and Structures,* 85, 107-108, 112; Rails, Ties and Switch-Timber, January 1911 to March 1912, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL; Engineering Report Upon Delaware, Lackawanna and Western Railroad, Volume I, Inventory as of June 30, 1918 – Revised June 30, 1926, ICC.

16. Willard, *Maintenance of Way and Structures,* 169, 172-174, 182-183.

Figure 16
January 2, 1906
Nay Aug Tunnels

Photograph Number Series A-311, Courtesy of the George Arent Research Library, Syracuse University

This photograph, taken of the west portals, shows the Nay Aug tunnels while the second tunnel, on the right, was under construction. The older tunnel, on the left, was built in 1856.

Figure 17
December 11, 1905
Nay Aug Tunnels

Photograph Number Series A-305, Courtesy of the George Arent Research Library, Syracuse University

This photograph shows the east portals of the Nay Aug tunnels while the second tunnel, on the left, was under construction.

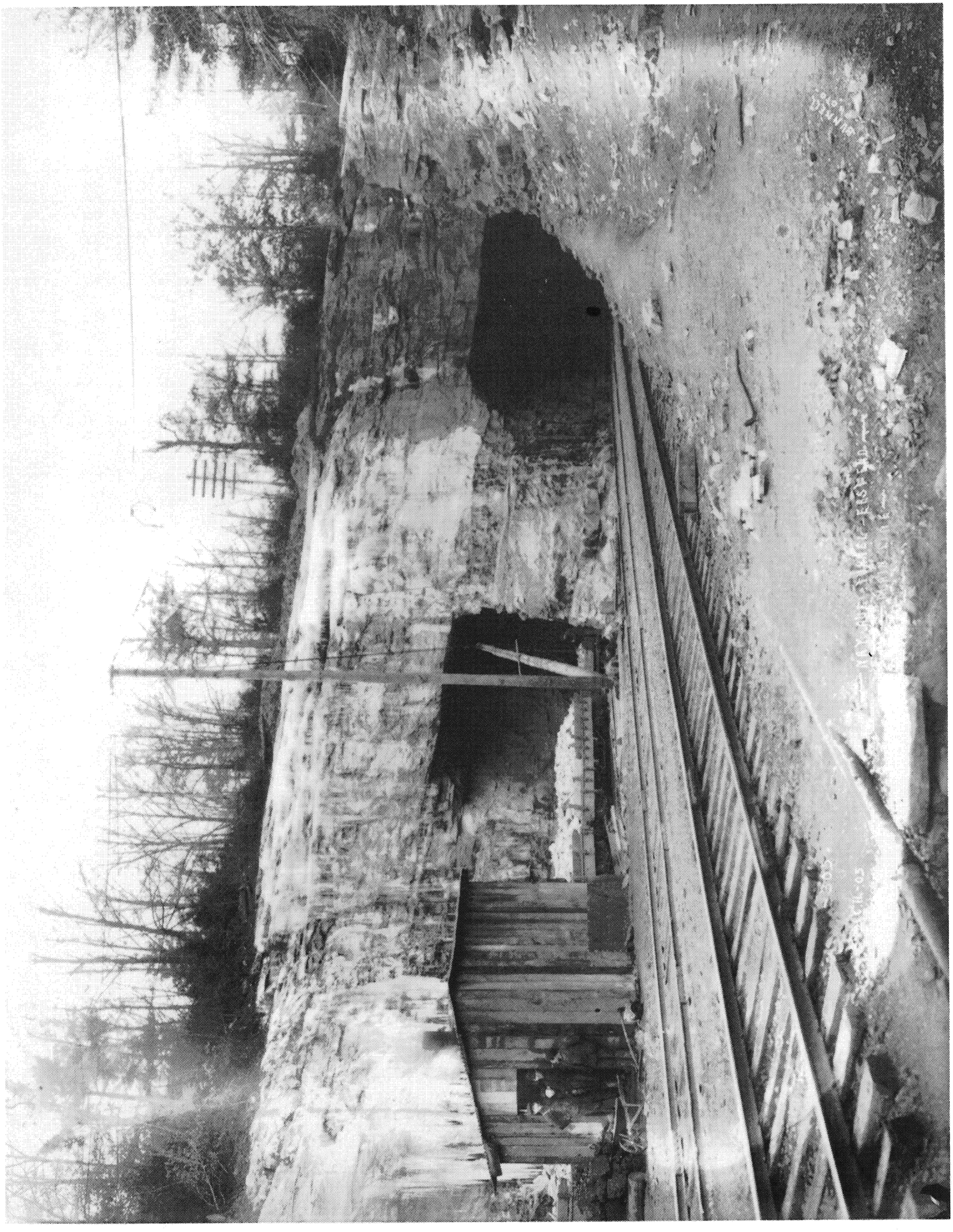

Figure 18
December 1, 1906
Nay Aug Tunnels

Photograph Number Series B-40, Courtesy of the George Arent Research Library, Syracuse University

This photograph of the west portals of the Nay Aug tunnels shows the completed second tunnel. Both tunnels, as shown, received a concrete facade with the completion date of the second tunnel and facade formed in the concrete. The east tunnel portals were never covered with a facade.

BUNNELL
-PHOTO-
D.L.&W.
-40-B-
D.L.&W.- NAYAUG TUNNEL-SCRANTON,PA.
12-1-06

right-of-way in five locations between Scranton and Slateford Junction to reduce the number of curves. These realignments occurred between mile posts 85.90 and 86.81, mile posts 87.20 and 87.50, mile posts 90.0 and 91.00, mile posts 114.78 and 118.78, and mile posts 119.38 and 119.83. In 1912-14 a fourth track was placed in some locations on the route such as between Gouldsboro and Lehigh, Mount Pocono to Steam Shovel Cut, and Gravel Place to Henryville.[17]

President Truesdale continued to increase the size of equipment, which resulted in the need for greater rail weight and deeper ballast. There was no problem in attaching rails of different weights to each other, for by the mid-1890s most rails of any weight were equal in height and base width. By 1910 the DL&W workmen began to lay rails of 101 pounds per yard. These rails were superseded by ones of 105 pounds per yard in 1914. The 105-pound rail remained standard until 1924 when the 118 pounds per yard rail was introduced. At the same time the DL&W used the Dudley splice bar to tie rails together. In 1925, Truesdale's last year as president, rail weight reached 130 pounds per yard. With the appearance of 130 pound rails, the length increased to thirty-nine feet from thirty-three feet. The DL&W workers placed twenty-five crossties for support beneath these new, longer rails. At the same time, the railroad abandoned the Wolhaupter shoulder, flat-bottom tie plate in favor of the standard tie plate held in place with common spikes. Only one more main line rail weight was used by the DL&W. In 1934 the line adopted a 131 pounds per yard rail.[18]

Heavier equipment and rails required more ballast on the roadbed. Since the main functions of ballast were to hold ties in place and more equally distribute to the subgrade the strain produced by a load on the rails and ties, large locomotives and cars required

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17. Delaware, Lackawanna and Western Railroad Company, *Annual Report of the Delaware, Lackawanna and Western Railroad Company For the Year Ending December 31, 1901* (N.Y.: Sears & White, 1902), 8; Tabor, *The Delaware, Lackawanna & Western Railroad,* Part I, 267, 30; Rails, Ties and Switch-Timber, January 1901 to December 1902; Rails, Ties and Switch-Timber, January 1911 to March 1912; Rails, Ties and Switch-Timber, April 1912 to July 1913, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL; President's No. 137, January 22, 1903; President's No. 309, May 2, 1905; President's No. 348, May 12, 1906, Authorities for Expenditures May 8, 1899 to April 16, 1909; President's No. 1076, July 17, 1909; President's No. 1165, January 28, 1910, Authorities for Expenditures January 26, 1910 to January 20, 1908; President's No. 1898, June 29, 1912; President's No. 2148, April 12, 1913, Authorities for Expenditures January 1, 1912 to December 31, 1913, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL; Improvements in Road and Equipment, October/November 1908, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL.

18. Engineering Report Upon Delaware, Lackawanna and Western Railroad, Volume I, Inventory as of June 30, 1918 – Revised June 30, 1926, ICC. "Delaware, Lackawanna and Western Railroad Company, Report of Field Inspections," Memorandum to Mr. Hood from L.H. Allen, P.M. Guyer, and F.P. Cahill, June 1932, Book 45, Field Notebook, Box 636, ICC; *Annual Report of the Delaware, Lackawanna and Western Railroad Company For the Year Ended December 31, 1939,* 15; Willard, *Maintenance of Way and Structures,* 153.

more ballast to distribute the impact of a train. Ballast, which in the nineteenth century consisted of either cinders, gravel, or stone, was placed under and around crossties. At the time it was often six inches deep. With the increased weights borne by crossties, ballast depth was increased to as much as twelve inches. Crushed stone of two and one-half inch mesh came to be considered the best ballast material by the turn of the twentieth century. Except for a short distance in New York, the two and one-half inch crushed stone was the ballast used by the DL&W soon after 1900. A ballast rock crusher was established at Delaware Water Gap on April 1, 1905, but the noise and dirt irritated the townspeople. They obtained an injunction against its operation. By 1908 the crusher had been relocated near Analomink where ballast was produced for a number of years. Nothing remains at that site today.[19]

Additional improvements to the line just after the turn of the twentieth century included rebuilding water facilities. Two types of water tanks were built along the Scranton to Slateford Junction route. These included a circular cypress wood tank constructed atop twelve to fourteen feet high timbers, and a circular steel Santa Fe type tank placed on a concrete foundation. Most wood tanks were twenty-four feet in diameter and sixteen feet high. The steel tanks were twenty feet in diameter and sixty feet high except for the one in East Stroudsburg, which had a diameter of sixteen feet and height of forty-five feet. Wooden tanks were placed at Gravel Place, Cresco, Paradise, Tobyhanna, Gouldsboro, Lehigh, Moscow, and Nay Aug, while steel tanks were located at East Stroudsburg, Pocono Summit, and Elmhurst. The Elmhurst tank was located just northwest of that borough and called Throop's tank. Eight water stations had ten-inch water columns and three had eight-inch ones. In 1927 a 100,000-gallon tank was added at Gouldsboro. Only one of these tanks remains. It is the steel Santa Fe type tank at East Stroudsburg (figure 19). The others were removed after the steam era ended in 1953.[20]

For safety and ease of operation, President Truesdale acted to have mechanical interlocking switches and automatic block electric signals installed. Interlocking switches

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19. Engineering Report Upon Delaware, Lackawanna and Western Railroad, Volume I, Inventory as of June 30, 1918 – Revised June 30, 1926, ICC; "A Test to Determine the Cost of Pneumatic Tie Tamping," *Railway Age* 70 (March 21, 1921), 721; Willard, *Maintenance of Way and Structures,* 48, 53; Charles B. Dudley, "Some Features of the Present Steel Rail Situation – I," *The Engineering Record* 58 (July 4, 1908), 8.

20. Delaware, Lackawanna and Western Railroad Company, *Annual Report of the Delaware, Lackawanna and Western Railroad Company For the Year Ended December 31, 1901,* 7; Engineering Report Upon Delaware, Lackawanna and Western, Volume I, Inventory as of June 30, 1918 – Revised June 30, 1926, ICC; Investment in Road and Equipment, 1927, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL.

Figure 19
February 1989
East Stroudsburg Water Station

This Santa Fe type steel water tank, erected ca. 1914, was one of the smaller tanks on the line between Scranton and Slateford Junction. It is forty-five feet high with a sixteen feet diameter.

were operated by a series of levers, which were located in a control tower. They could only be operated in proper sequence so as to prevent two trains from occupying the same track and to establish the particular route set for a train to take. They also protected points of danger such as at switches and controlled yard movements. Of the eighty-seven interlocking plants operated on the DL&W, eleven were located between Scranton and Slateford Junction. Nine of the two-story interlocking towers were constructed of concrete (figure 20), while two towers (Lehigh and Analomink Street in East Stroudsburg) were wood frame buildings (figure 21). These structures were located at the East End just southeast of the Scranton yard (thirty-six levers), Nay Aug (twenty-eight levers), Lehigh (thirty-two levers), Gouldsboro (forty-four levers), Tobyhanna (forty-eight levers), Pocono Summit (thirty-two levers), Henryville (sixteen levers), Analomink (twenty-nine levers), Gravel Place (thirty-two levers), East Stroudsburg (thirty-seven levers), and Slateford Junction (forty-four levers). All of these towers had mechanical interlocking systems with electrical improvements. Five of these towers, four concrete and one wood, exist. These are located at Gouldsboro (1912), Tobyhanna (1910), Gravel Place (1911), the wood frame one at East Stroudsburg (1908), and Slateford Junction (1911). From these towers, switches permitting crossovers from one track to another were controlled as well as yard and siding track. Today, the East Stroudsburg tower still retains its original levers, rods, and cables. As a result, it has historical importance.[21]

The block signal system was used to keep space between trains traveling in the same direction on the same track. In block signaling the track was divided into a number of sections called blocks. Generally, blocks were no longer than two miles and more often covered a shorter distance. A signal would be found at the beginning of each block to control that section of track. On a double track system the signal would be located on a pole next to the track. On those lengths of line with three or more tracks, the signal would be fixed to a signal bridge above the track. A block signal consisted of a semaphore signal with two arms. The upper arm, called the home signal, indicated whether a train may or may not pass into the upcoming block. The lower arm, or distance signal, indicated what the upper arm on the next block signal showed. An arm in a horizontal position indicated stop, while the arm at sixty degrees below horizontal signaled to proceed, for the block was clear. For use at night, a lantern was electrically illuminated on the opposite side of the

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21. Engineering Report Upon Delaware, Lackawanna and Western Railroad, Volume I, Inventory as of June 30, 1918 – Revised June 30, 1926, ICC; W.H. Elliott, *The ABC of Railroad Signaling* (Chicago: MacKenzie-Klink Publishing Co., 1909), 9, 46; Braman B. Adams, *The Block System of Signaling on American Railroads* (N.Y.: The Railroad Gazette, 1901), 174-176.

Figure 20
May 1989
Tobyhanna Interlocking Tower

This two-story concrete interlocking switch tower was erected in 1910. It is typical of the interlocking towers along the DL&W track.

Figure 21
February 1989
East Stroudsburg Interlocking Tower

This two-story wood frame building was constructed in 1908. Most of these towers were built of concrete, so the East Stroudsburg tower is not typical. It still contains the original switch levers. The structure was rehabilitated with private funds in 1989.

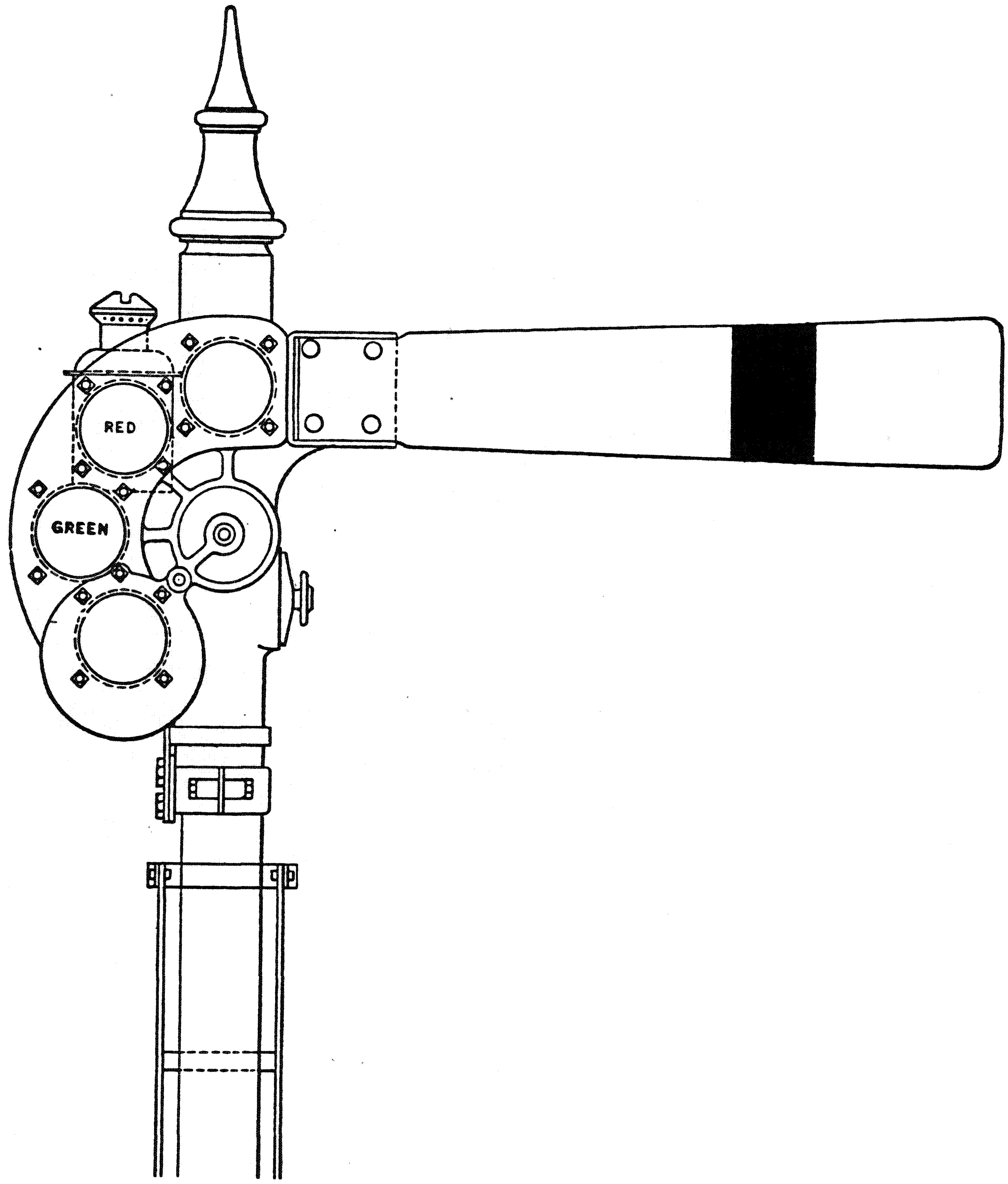

Figure 22
Semaphore Signal Found on signal Bridges

Two semaphore signals were attached to a pole on signal bridges above each track. This illustration is of an upper or home semaphore. The arm is in the stop position and, therefore, the red lens covers the lantern. When lowered into the proceed position, the green lens would cover the lantern.

pole from the arm. When the arm on the home signal was in the horizontal position indicating stop, a red lens would cover the lantern light. With the arm lowered to the sixty degrees below horizontal position, a green lens would cover the lantern light (figure 22). The distance signal either showed green for clear or yellow for be prepared to stop.[22]

The automatic block electric signal system adopted by the Delaware, Lackawanna and Western management in 1901 came about through the development of electric motors and frost-proof batteries by the 1890s. A manual block signal system had been developed and employed by the Pennsylvania Railroad about 1880. It required that men be stationed along the track to operate each signal. With the development of the automatic electric system, men were no longer required to operate it. Instead, batteries kept in wells along each block supplied a low voltage electric current carried through the rails. A wire attached to rails across a joint (figure 23) ensured that the current would not be disrupted. At the end of a block, rail joints had to be insulated to prevent current flow to the next block. Fiber plates were placed at all contact points to prevent such an occurrence. The DL&W used the insulated Neafie joint for such purposes. Upon entering a block, a train's metal wheels would complete the electric circuit thus causing a switch to trip and set the upper or home semaphore signal in a horizontal position and produce a red light at night. The engineer on any train coming to that block would see the signal and know he must stop his train because the upcoming block was occupied by another train. When a train departed a block, the electric circuit would be broken and the semaphor signal would move to sixty degrees below horizontal. It showed a green light at night. The engineer on any following train would thus know that the upcoming block was vacant. The lower or distant semaphore signal would indicate to an engineer whether the block beyond was occupied or clear. A train in the succeeding block would activate a distance signal to the occupied position by connecting the electrical rail current causing a magnetic field to break.[23]

As the number of tracks increased between Scranton and Slateford Junction in the period after 1901, the Delaware, Lackawanna and Western engineers changed the automatic block system semaphore signal locations. In 1901 they were placed on poles beside the double tracks. In the period 1910 to 1912 signal bridges were constructed so

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22. Elliott, *The ABC of Railroad Signaling,* 8-10, 36; E.P. Alexander, "Railway Management," in Thomas Curtis Clarke, et al., *The American Railway,* 213.

23. Delaware, Lackawanna and Western Railroad Company, *Annual Report of the Delaware, Lackawanna and Western Railroad Company For the Year Ending December 31, 1901,* 7; Adams, *The Block System of Signaling on American Railroads,* 165-166; Willard, *Maintenance of Way and Structures,* 162.

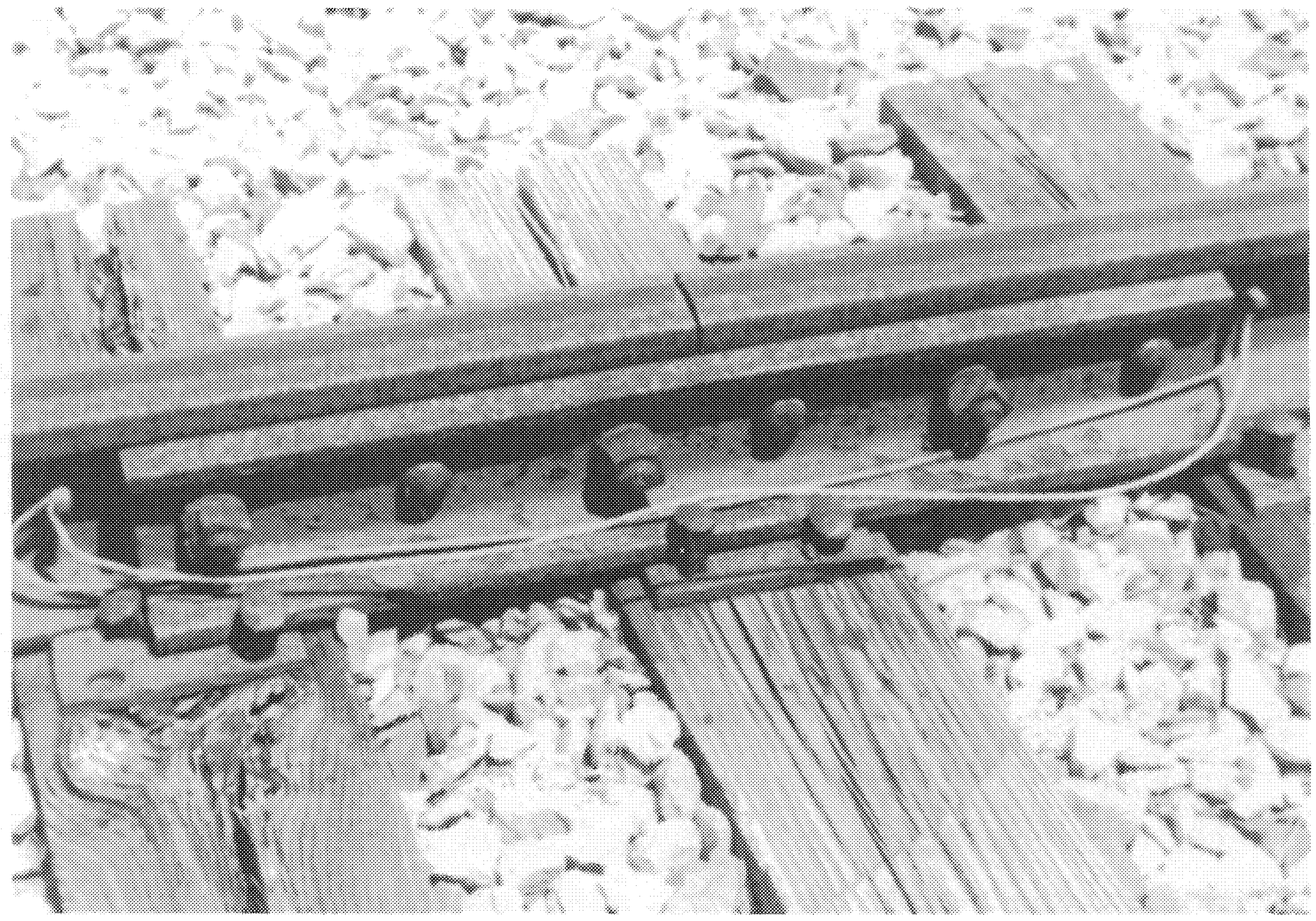

Figure 23
May 1989
Wire Cable Used in the Signal System

Although this cable was used in connection with the post-World War II centralized traffic control (CTC) system, the same arrangement was used in the block Signal System. The wire permitted the low voltage current in the track to cross the rail joints. This photograph also shows a splice bar. They were placed on either side of rails at the joints and used in conjunction with bolts to join rails together. Splice bars were bolted to the rails with the nuts alternating as shown. The reason for alternating nuts was that in case of a derailment the wheels could cut off nuts on only one side of the track thus leaving half the bolts to hold the track together.

Figure 24
May 1989
Amalomink Signal Bridge

This signal bridge was built in the 1912 period and designed to bridge over four tracks. Originally, it carried semaphore signals over each track as part of the automatic block signal system.

Figure 25
May 1989
Signal Bridge at Mile 125.70

Located between Elmhurst and Nay Aug, this 1912 signal bridge covered three tracks. In 1925 colored lights (red and green) replaced the semaphore signal. This signal bridge is one of the few to retain the colored lights.

that the semaphore signals could be placed over the newly built three and four-track route. In the approximately thirty-three mile length between Scranton and Mount Pocono, the DL&W built thirty-five signal bridges (figures 24 and 25). Since one bridge served one block, the area between Scranton and Mount Pocono had about one block per mile. In 1925 the semaphore signals were removed and replaced by colored light signals. These lights were similar to an automobile traffic signal light.[24]

Just after the end of the Second World War, the Delaware, Lackawanna and Western management began to install a new system of traffic control. Called centralized traffic control or CTC, this arrangement permitted one man to control traffic movement over 100 miles or more of track. This method operated on a principal similar to the automatic block electric signal system, only over a larger expanse of track. Batteries, placed in boxes along the track, supplied a low voltage electric current to the rails. Trains, in turn, completed electrical circuits, which relayed their location to a central board. One man at the board could thus know the exact location of all trains on the length of track for which he was responsible. Radios, installed in the diesel electric locomotives, allowed the man at the central board to communicate with the train engineers for effective traffic control. At the same time the signal CTC operator controlled the switches and signals over his extended section of track.[25]

The final changes to the Scranton/Slateford Junction route began with a flood in 1955. On the night of August 18, 1955, and continuing into the following morning, heavy rain from Hurricane Diane led to severe flooding between Scranton and Delaware Water Gap. Two bridges were lost at miles 78.66 and 131.80. The former bridge succumbed after Brodhead Creek rose thirty feet in fifteen minutes. In addition eighty landslides and numerous washouts occurred. The DL&W could not operate over its line between Scranton and East Stroudsburg for twenty-nine days. When it repaired the damage, the DL&W directors decided to abandon the third and fourth tracks. Not only did this reduction lessen maintenance costs, but the centralized traffic control system effectively permitted trains to operate on two tracks. This two-track system continued in use through the remainder of the

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24. President's No. 1149, January 24, 1910, Authorities for Expenditure January 1, 1910 to December 31, 1911, President's No. 1707, February 9, 1912, Authorities for Expenditure January 1, 1912 to December 31, 1913, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL; Investment in Road and Equipment, 1927, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL.

25. "Even on Quiet Lonely Nights, Someone Waits for a Train," *The Pocono Record* (The Stroudsburgs, Pennsylvania), December 28, 1977.

DL&W era as well as the period after 1960 when it merged with the Erie Railroad. Bankruptcy brought control by the semi-public Conrail corporation in 1976. Conrail removed the second track in 1980 between Moscow and East Stroudsburg. That company operated on the one track with greatly reduced traffic until it abandoned the line in 1983.[26]

D. The Delaware, Lackawanna and Western Workforce

From its inception in the 1850s to about 1920 the ethnic background of most Delaware, Lackawanna and Western employees who operated the trains or worked in the maintenance division on the line between Scranton and Slateford Junction had little variation. In the period from the 1850s to almost 1900 all workmen had an Irish, Welsh, English, or German background with the preponderance being of Irish extraction. By 1870 it was rare that these men were not at least second generation Americans and nearly all of them were born in Pennsylvania. Eastern and Southern European immigrants who began to arrive in the area by 1880 did not gain employment on the railroad until almost 1900, and then only twelve Italians and seven Austrians worked on the line between Scranton and Slateford Junction. These men served as laborers on the section crews.[27]

The year 1910 found a few more immigrants had gained employment with the Delaware, Lackawanna and Western. Eighty-five Italians labored as stone crushers at the ballast plant near Analomink, while four other men of that ethnic background worked on a section crew near Pocono Summit. At Elmhurst, four Slovaks (Slovakia was a region of Austria at the time) and one Russian comprised a section crew. Elsewhere, six men from France toiled on section crews near Lehigh. Before 1920 no person from Eastern or Southern Europe worked on a train crew. That field of endeavor remained for the Americans with an Irish, Welsh, English, or German background. Only one black porter lived in a borough along the line from Scranton to Slateford Junction by 1910. Although by 1900

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26. "Eastern Railroads Hard Hit by Floods," *Railway Age* 139 (August 29, 1955), 7; "Floods Stagger Eastern Lines," *Railway Age* 139 (September 19, 1955), 39-42; Tabor, *The Delaware, Lackawanna & Western Railroad*, Part I, 135-136, 140, 145; Interview of Earl Tryger by Berle Clemensen, February 13, 1989; John H. Dunn, "Modern Signaling = Fewer Tracks" *Railway Age* 139 (July 11, 1955), 30-33.

27. Twelfth Census of the United States, 1900, Monroe County, Pennsylvania, Records of the Bureau of the Census, Record Group 29, Regional Archives and Record Center, Denver, Colorado. Area census records for the period 1860-1880 were also reviewed.

most DL&W porters and cooks were black, they lived in territory outside of the Scranton to Slateford Junction route.[28]

After 1920 a few men of Eastern European ethnic origin managed to join train crews first as firemen and then as conductors and engineers. The preponderance of train crews, however, always were made up of men of Irish, Welsh, English, and German origin as long as the Delaware, Lackawanna and Western Railroad operated. At the same time after 1920 maintenance workers such as section crews contained more and more men of Eastern European ethnic backgrounds. If Italians worked for the railroad, it was usually only long enough to obtain money for other endeavors. No women occupied labor intensive jobs on the line be it train or section crew. Women, however, began to hold office jobs by 1918 when the federal government controlled the DL&W. The railroad, once free of government control in 1920, continued to employ females in office work.[29]

E. Impact of the Delaware, Lackawanna and Western Railroad on the Area of the Scranton to Slateford Junction Route

Although some people had settled in the Water Gap area by the middle of the eighteenth century, the major portion of the area through which the DL&W track passed remained a mountainous wilderness until the railroad gave rise to a more rapid settlement. Still, except for some industry in Scranton and the Stroudsburg area at each end of the line, the settlements along the route did not develop into centers of note for either industry or agriculture. The few products made here came for the most part from local raw materials.

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28. Thirteenth Census of the United States, 1910, Monroe and Lackawanna Counties, Pennsylvania, Records of the Bureau of the Census, Record Group 29, Regional Archives and Record Center, Denver, Colorado.

29. Interview of George Karabin, former DL&W engineer, by Berle Clemensen, May 19, 1989; Interview of Fred Hall, former DL&W engineer, by Berle Clemensen, May 23, 1989. When the United States entered the First World War, the drastically increased war freight brought problems for an uncoordinated railroad system. The greatest problem stemmed form a car shortage. This shortage occurred when traffic jams caused by a lack of terminal trackage, warehouse space, and yard facilities resulted in the use of box cars for storage. An impending crisis created by this situation led President Woodrow Wilson to nationalize the railroads on December 26, 1917 under the United States Railroad Administration. He named Secretary of the Treasury William Gibbs McAdoo as director of that agency. McAdoo initiated a number of operational changes for more efficient service. New shipments were to be accepted only if they could be delivered promptly. Freight was to be sent over the shortest route rather than holding to the previous practice of sending it hundreds of miles out of its way to keep it moving over a single railroad. Cars had to be promptly unloaded and moved from congested areas to locations of need. Duplicate service was eliminated. It was much easier for the federal government to institute efficiency than for the numerous railroads. Under private control the Sherman Antitrust Act of 1890 had made coordination difficult. In addition each railroad had sought to keep any traffic advantage it had. McAdoo also instituted a study of working conditions and wage rates. The result of this study ended wage discrimination for women and blacks. More women entered railroad employment at this time of federal control and, for the first time, were employed by the DL&W.

Most industries served by the DL&W were located in New York and New Jersey. Only Scranton emerged as a hub of industrial and mining activity along the Pennsylvania corridor. East Stroudsburg prospered but not to the extent of Scranton. The thin, rocky soil of this mountainous area between Scranton and Slateford Junction limited farming. Instead, agriculture thrived in the fertile land along the DL&W's New York route. Ultimately, vacation resorts predominated in the rugged area southeast of Scranton.

Before European settlement of the area, the Minsi band of the Delaware Indians inhabited the Pocono region. These peaceful and friendly people lost their land to white men's control in 1737 and ten years later were removed from it. With the Delaware River as the main communication route, European settlers arrived in the Water Gap area by the late 1740s. Edward Marshall and family established themselves at what became Slateford, while the Daniel Brodhead family occupied the site of later East Stroudsburg. The turbulence created by the French and Indian War, followed by the American Revolution, retarded settlement along this segment of the Delaware River. Indian raids during the French and Indian War brought the establishment of Fort Hamilton in January 1756, at what later became Stroudsburg. Although no Indian incursions took place at the time of the American Revolution, Fort Penn was erected near the site of Fort Hamilton for the purpose of protecting the local population.[30]

Soon after the American Revolution the Water Gap area grew in population. Anthony Dutot, a refugee from the slave uprising in Haiti, laid out the town of Dutotsburg in 1793. It later became Delaware Water Gap. Jacob Stroud purchased land in 1795 on which his son Daniel platted the town of Stroudsburg in 1806. In the meantime Henry Drinker purchased 25,000 acres of land close to present-day Moscow in what became Madison and Covington townships of Lackawanna County. That area became known as Drinker's Beech because of the large number of beech trees found there. Settlement in that district had been retarded because of the natural barriers presented by the Pocono and Moosic Mountains. Not only did the area contain beech trees but this heavily forested region

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30. John C. Appel, Joan B. Groff, Joel Keller, Vertie Knapp, Thomas H. Knepp, Reg Nauman, and Edna Ponder, *History of Monroe County, Pennsylvania 1725-1976* (East Stroudsburg, Pa.: Pocono Hospital Auxiliary, 1976), 5-20.

contained vast numbers of oak and hemlock as well as maple, ash, cherry, and pine trees. Wildlife abounded with deer, elk, bear, bobcats, fox, mink, weasels, turkey, and grouse.[31]

Early settlers in the Water Gap and Stroudsburg area lived basically a subsistence life. Some small water-powered grist and sawmills were established. Tanneries began to be established by 1822 to take advantage of the oak and hemlock bark used for tanning hides. Charles and Jacob Stroud built one of the earliest tanneries.[32]

Outside of the Water Gap area, the region through which the Delaware, Lackawanna and Western later traversed did not open to settlement until the 1820s. As the inheritor of his great uncle's land, Henry W. Drinker hoped to promote habitation by opening a turnpike through the Drinker's Beech section. In 1819 he received a charter from the state to construct the Philadelphia and Great Bend Turnpike. At the same time he advertised for settlers. Popularly known as Drinker's Turnpike, the road began in the Stroudsburg area and extended to the Lackawanna River in the location of later Scranton. It was completed over that range by 1826 and followed basically the routes of present day highways 611 and 435. Better communication promoted settlement. The first people to arrive made maple syrup in the spring as a principal business. A lumberman arrived in Drinker's Beech and established a sawmill in 1821. Five years later John Holgate opened a factory there where he made such items as brush blocks and shovel handles. His products were mostly hauled by wagon to Philadelphia. The trip took ten days. In 1830 several more lumbermen opened sawmills. At the same time the village of Moscow was founded.[33]

During the 1840s more lumbermen and tanners were attracted to the area of what became the DL&W route. Gilbert Dunnings started a sawmill just north of Moscow in 1847. A village soon developed around it. From Moscow southeast through future Lackawanna County, four sawmills operated. A popular area for lumbering developed along the Lehigh

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31. *Monroe County – History Legacy: A Summary of Historic Sites and Structures in Monroe County, Pennsylvania* (Stroudsburg, Pa.: Monroe County Planning Commission, 1980), 9-10; G. Ellis Miller, "Drinker's Beech" *Shopper's Guide and News* (Moscow, Pennsylvania), July 22, 1965, October 14, 1965; G. Ellis Miller, "Drinker's Beech" *The Villager* (Moscow, Pennsylvania), April 15, 1971, January 22, 1976.

32. Appel, et al., *History of Monroe County,* 33.

33. Miller, "Drinker's Beech," *Shopper's Guide and News* (Moscow, Pennsylvania), June 24, 1965, July 15, 1965, July 22, 1965, September 23, 1965, November 11, 1965; Miller, "At Drinker's Beech," *The Villager* (Moscow, Pennsylvania), January 22, 1976; Miller, "Another Look At Drinker's Beech," *The Villager* (Moscow, Pennsylvania), March 11, 976, April 15, 1976; Murphy, *Jubilee History,* I:451, 488, 537; Frederick Hitchcock and John P. Downs, *History of Scranton and of the Boroughs of Lackawanna County* (N.Y.: Lewis Historical Printing Co., 1914), II:366.

River in Wayne County's Lehigh Township. Here timber could be floated down that waterway. The largest sawmill expansion occurred around Stroudsburg in Monroe County. The fledgling tanning industry extended here, too, as eleven tanneries operated by 1850.[34]

The completion of the Delaware, Lackawanna and Western track in 1856 provided a mixed blessing for the region between Scranton and Slateford Junction. The railroad stimulated the lumber and tanning industry. The destruction of the woods, however, occurred at such a rapid rate that the countryside became a denuded wasteland. Scrubby growth such as rhododendron, whortleberry, and huckleberry replaced the trees. Rapid moisture runoff began to affect the water supply by 1875. Without trees to moderate the flow of moisture, streams would swell with water after a rainfall only to rapidly become almost dry.[35]

Settlements along the Delaware, Lackawanna and Western line appeared or increased in size with the coming of the railroad. Nay Aug, the first inhabited area along the track from Scranton, attracted a tannery and brickyard. The village of Dunnings (Elmhurst) prospered beginning in the later 1850s with a chair factory, a shingle mill, a box factory, two tanneries, and two sawmills. One of the tanneries, owned for a time by Strong, Robinson and Company of New York City, could handle 50,000 hides per year. At the same time lumbering became one of the chief occupations in both the Moscow area and Drinker's Beech. By 1870 at least twenty-four large sawmill companies and several smaller concerns harvested timber. The Van Brunt Lumber Company at Moscow shipped lumber to the Steinway Piano Company. Although not on the DL&W route, Daleville, just south of Moscow, had a clothespin factory. A short gravity railroad was constructed to the east to connect with the Delaware, Lackawanna and Western for clothespin shipments. While lumbering activity had occurred in the Lehigh area before the coming of the railroad, it increased into the largest industry of the area. As elsewhere most factories in the Tobyhanna area were related to the timbering industry. These included five sawmills, three

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34. Murphy, *Jubilee History*, I:475; (Hitchcock and Downs), *History of Scranton*, II:364-365; Miller, "Drinker's Beech," *Shopper's Guide and News* (Moscow, Pennsylvania), April 14, 1966; Appel, et al., *History of Monroe County*, 53.

35. Mathews, *History of Wayne, Pike and Monroe Counties*, 328; Miller, "Another Look At Drinker's Beech," *The Villager* (Moscow, Pennsylvania), December 12, 1976.

clothespin factories, a shoe peg factory, and a planing mill. Sand Cut, as Gouldsboro was originally called, had its sawmills as well.[36]

It was near Gouldsboro that Jay Gould of railroading fame got his start. On a large acreage of land he purchased in 1856, Gould built a tannery that had a capacity of 100,000 hides per year. He connected the plant with the newly completed DL&W via a nine-mile plank road to Sand Cut. In 1859 he entered into partnership with the New York leather merchants Lee and Loup. After a year, without any business reports from Gould, Loup visited the tannery. Gould was absent and his workers would not answer questions. Loup returned to New York with the feeling that Gould had defrauded him. He contacted his partner Lee and urged him to force Gould to make both restitution and commit suicide. Lee instead decided to take control of the tannery. He went to Scranton where he recruited a force and marched on the tannery. With surprise as his ally, Lee gained possession of it. When Gould returned, he organized his workers to help him get the plant back. He and his group sneaked into the tannery and with clubs and fists set the Lee force to flight. Gould subsequently closed the tannery in 1861 and entered a new career of railroad development. A second tannery soon opened at Gouldsboro with a capacity of 85,000 hides per year.[37]

Lumbering and tanning proved the economic mainstay for the remainder of the district to Slateford Junction. Oakland, or Cresco as it was later called, and its nearby sister village, Mountainhome, to which the DL&W ran a spur line, developed because of the railroad. By the late 1850s lumbering and tanning interests abounded there. Various industries using wood opened in those two villages. Factories made shingles, barrel hoops, shoe pegs, clothespins, school slate frames, butterboxes, wooden buttons, and pitch, tar, resin, and turpentine from pine trees. Pocono Summit and the Forks, as Mount Pocono was originally named, had their share of lumbering. The greater inducement to settle there was the combination of rail transportation and heavy woods. Henryville actually had its beginning some twenty years before the DL&W opened its line when a sawmill began

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36. Hitchcock and Downs, *History of Scranton,* II:364-365, 369; Miller, "Drinker's Beech," *Shoppers Guide and News* (Moscow, Pennsylvania), October 20, 1966; Miller, "Drinker's Beech" *The Villager* (Moscow, Pennsylvania), January 16, 1969; Interview of June Davis, local Elmhurst historian, by Berle Clemensen, February 13, 1989.

37. Murphy, *Jubilee History,* I:479-480, 544; Mathews, *History of Wayne, Pike and Monroe Counties,* 1276.

operation there. Spragueville (Analomink) had a tannery, while a pulp and paper mill located at Delaware Water Gap.[38]

East Stroudsburg differed from the mountain villages along the Delaware, Lackawanna and Western route in that it sustained a growth far greater than the others. Although the DL&W built a combination passenger and freight depot there in 1856, the population and business grew so quickly that a new depot with separate freight house were constructed eight years later. The town had its share of sawmills and tanneries. Other types of businesses located there as well, which were not found in the mountain towns. These industries included such interests as a woolen mill, a glass works, a brewery, and the Tanite Company. The latter firm used waste leather scraps from tanneries to make emery wheels.[39]

The process for tanning was laborious and unhealthy. Employees in these plants were usually Irish immigrants who also comprised the labor force in most of the other businesses at the time. The tanning process required about a year from the point the bark was peeled from trees until the finished leather was ready for shipment. In the winter hemlock and oak trees were felled and the bark stripped from them. The bark was taken to open-sided sheds where it dried. When it had dried, the bark was ground and placed in vats of water to remove the tannic acid used in tanning. In the meantime, hides arrived from the New York City markets. Many of these hides were imported from South America. The hides were placed in vats containing a mixture of lime and salt. In this stage the hair, and any flesh and fat were loosened. When taken from the vat, the hides were scraped to remove the hair and flesh. The cleaned hides were then placed in eight-foot cubical vats containing the tannic acid liquid. After sufficient time, the hides were removed and placed in a loft for drying. When dry, the stiff hides were placed on a brass covered table where a heavy eight-inch brass roller softened them. After this process, the hides were loaded into box cars and shipped back to New York. The hemlock bark produced a reddish colored leather, while oak gave leather a grayish cast. The hair removed from the hides was sold

38. "The Bells Ring the Message of Progress in Monroe County, PA. and Tributary County Where Industry and Recreation Meet" (East Stroudsburg, Pa.: Hughes Press, 1915), 83; Bancroft, *Ringing Axes and Rocking Chairs,* 19, 73-74; Mathews, *History of Wayne, Pike and Monroe Counties,* 1188, 1259, 1263, 1267, 1269, 1278.

39. Mathews, *History of Wayne, Pike, and Monroe Counties,* 1188, 1192; Appel, et al., *History of Monroe County,* 87-89.

for use in lime plaster. The fleshings, as the extracted flesh and fat was called, was boiled and sold for pig feed.[40]

In addition to the lumber and tanning industries, agriculture formed a segment of the area's economy. With the opening of adequate rail transportation, more and more farmers were attracted to the area. Farming expanded until the turn of the twentieth century. Wheat and corn were popular crops, but, since much of the land proved deficient for agriculture, farmers had to augment their income from other sources. As a result, farmers turned to lumbering during the winter. They frequently contracted with sawmill owners to cut trees. Often farmers felled their own trees and made mine props and railroad ties. In addition they stripped bark from hemlock and oak trees for use in the tanneries.[41]

As often happens, any economy heavily dependent on an exhaustible natural resource for its source of raw material must either alter the economic base or, in the end, perish with the resource. Without regard to the future, the lumbering and tanning interests consumed ever increasing numbers of trees. The decimation reached its peak in the 1870s. By the early 1880s most sawmills had stilled and many tannery owners sought their fortunes elsewhere. Some tanneries managed to exist into the early twentieth century. The last one, the Elk Horn Tanning Company of East Stroudsburg, remained until the 1930s.[42]

The various communities adopted different measures to overcome the economic difficulties caused by the demise of the lumber and tanning industry. Nay Aug became basically a railroad town. The DL&W developed a yard there that could accommodate 130 railroad cars. Its Winton branch connected here with the main line. Coal from Winton was classified in the Nay Aug yard for shipment elsewhere. In 1883 N.G. Schoonmaker purchased much of the abandoned Dunnings acreage. He renamed the village Elmhurst and sought to promote the settlement as an exclusive residential area. Moscow's economic support became agriculture although a silk mill was built there in the 1880s. A Paterson, New Jersey firm also opened a silk factory in Tobyhanna in 1883. Silk was brought from Italy and Japan to be spun and prepared for weaving. Tobyhanna and especially

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40. Bancroft, *Ringing Axes and Rocking Chairs,* 80; Miller, "Drinker's Beech," *Shopper's Guide and News* (Moscow, Pennsylvania), October 20, 1966; *Monroe County – History Legancy,* 15; Appel, et al., *History of Monroe County,* 87.

41. Appel, et al., *History of Monroe County,* 76-77; Miller, "Another Look At Drinker's Beech," *The Villager* (Moscow, Pennsylvania), August 19, 1976.

42. Appel, et al., *History of Monroe County,* 81-82, 87.

Gouldsboro became important ice centers. The ice industry began in 1889. Ice was harvested from the lakes in the area beginning in January and stored in huge ice houses. Ice cakes of a uniform size of thirty-two by twenty-two inches and an average thickness between twelve to eighteen inches would be shipped in the summer to points in New Jersey and New York City. Ice was also used in the DL&W's refrigerator cars. Ice trains consisted of fifty to sixty cars with each car holding an average of 180 cakes of ice. Over a million tons of ice would be moved to the eastern seaboard each summer. This ice industry began to dwindle after the Second World War with the last shipments made by the mid-1950s. All of the ice houses have since been razed. In addition to ice, Gouldsboro was the location of a freight classification yard for westbound cars going to Binghamton and Elmira, New York. Classification meant grouping according to destination.[43]

Tobyhanna gained from the opening of a United States Army training camp north of the village in 1913. In 1914 the DL&W laid a spur track to the camp. During 1918 the base was used as a center to prepare ambulance and tank personnel for Europe. In the 1935-37 period, it also served as a Civilian Conservation Corps camp for 400 young men. It acquired other CCC functions in 1938 as a distribution center for clothing and inoculations. In 1942 the camp was converted for use by the Air Service Command. Two years later gliders were boxed and sent to England for the D-day invasion. German prisoners of war were also interned at the site during the Second World War. After the end of that war in 1945, the Tobyhanna camp's military function ended. The base was closed until 1953. In that year the U.S. Army Signal Corps reactivated the camp as the Tobyhanna Army Depot. It functioned as a place to stockpile, repair, and distribute communications equipment. Still operating to the current day, the Army Depot has provided employment to many local citizens over the years.[44]

One village, Cresco, took advantage of the scrubby growth that replaced the trees. Beginning in the 1890s residents began to harvest huckleberries, which were shipped by

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43. Hitchcock and Downs, *History of Scranton,* II:364; Miller, "Drinker's Beech," *Shopper's Guide and News* (Moscow, Pennsylvania), April 14, 1966; Murphy, *Jubilee History,* I:475, 477; Miller, "Drinker's Beech," *The Villager* (Moscow, Pennsylvania), April 17, 1969; "Lackawanna Handles Anthracite Traffic Skillfully," *Railway Age* 83 (December 17, 1927), 1199; Appel, et al., *History of Monroe County,* 85, 89; Mathews, *History of Wayne, Pike and Monroe Counties,* 1276; "Machines Replace Railroad Men," *The Pocono Record* (The Stroudsburgs, Pennsylvania), June 13, 1970; "Putting Up Ice in Wayne County – 1900s to 1930s," *Wayne Independent* (Honesdale, Pennsylvania), March 26, 1981; Tabor, *Delaware, Lackawanna and Western Railroad,* Part I, 218-219; Interview of June Davis by Berle Clemensen, February 13, 1989.

44. Appel, et al., *History of Monroe County,* 203-204; Improvements in Road and Equipment, September 1914, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL.

rail to New Jersey and New York City. For a time in that same period, train carloads of rhododendron were transported from the area.[45]

East Stroudsburg hardly suffered from the loss of lumber based industries. A number of manufacturing concerns located in that community as the woods disappeared and served to transform the economy. The International Boiler works, originally Weiser, Seiders and Company, established a factory in 1886. It became the largest individual employer. A number of silk mills situated there in the 1880s followed by a hosiery maker, and in the early twentieth century by publishers, a liquid soap producer, several bathroom fixture makers, a hot water heater fabricator, and a plant for producing telephone and electric lines. The 1930s depression had its effect on the borough, but some plants such as the International Boiler works still function. At nearby Gravel Place the DL&W installed a yard that served for fueling and minor repairs as well as a pusher station. It closed after the Second World War.[46]

By 1900 the Delaware, Lackawanna and Western president, William Truesdale, began to actively support the development of business along the route. In that year the railroad established a knitting mill at East Stroudsburg that employed 300 people. The following year the DL&W issued a 300-page book entitled *Industrial Opportunities.* In this effort to attract business, the railroad book contained information on every town along its entire route. It listed the distance of each community from New York City and Buffalo as well as railroad facilities, leading industries, taxation, labor costs, land values, vacant factories, source of power, and house rents. Outside of Scranton and East Stroudsburg few industries were interested in the smaller villages. As a result, the lack of job opportunities beyond occasional day labor caused many young people to leave the lesser populated areas.[47]

Another service provided by the Delaware, Lackawanna and Western involved the "accommodation" train. In an early version of urban flight, many people sought to escape Scranton's congestion around 1900. A number of families moved from that city to the

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45. Bancroft, *Ringing Axes and Rocking Chairs,* 88; Appel, el al., *History of Monroe County,* 82.

46. Keller, *History of Monroe County Pennsylvania,* 244, 247-249, 276-277; Appel, et al., *History of Monroe County,* 89, 158; "The Bells Ring the Message of Progress," 13.

47. "Financial," *Railway Age* 30 (November 30, 1900), 439; "Delaware, Lackawanna & Western Railroad," *Railway Age* 32 (August 16, 1901), 135 and 32 (September 13, 1901), 258.

populated areas as far as Tobyhanna while continuing to work in Scranton. This number was augmented by many DL&W office employees in 1908 who were transferred from New York City to Scranton to work in the office space installed in the newly constructed passenger depot. Many of these people chose to live in Elmhurst, Moscow, and other nearby towns. To "accommodate" these people, the DL&W began to operate a commuter train that ran from Tobyhanna to Scranton each morning and returned in the evening. It stopped at each station between the two towns as well as a few flag stops. The service lasted until about 1937 when automobiles superseded it.[48]

Farmers, of course, suffered from the lack of winter employment when the lumber and tanning industries ended. This situation prompted many of those engaged in agriculture to change their focus from wheat and corn to other facets of farming. In the Moscow and East Stroudsburg areas dairy farms developed. This phenomenon was made possible by the growing demand for milk by New York City residents, the development of the ice industry, and commencement of a nightly DL&W milk train that ran between Binghamton, New York and New York City. At first the DL&W contracted with a private business to collect milk when it began the milk train in 1887, but in 1900 the railroad took control of the lucrative milk trade. Apple orchards were developed in the Elmhurst, Moscow, and East Stroudsburg areas as well. A remnant of an apple orchard can still be seen on the north end of Elmhurst. Poultry raising also came into prominence in the East Stroudsburg region. In the section around Tobyhanna and Gouldsboro farming did not change as much, for the development of the ice industry provided farmers with winter employment. The importance of agriculture to the area has declined since the Second World War.[49]

In the end it was the vacation business which provided the economic underpinning for the area. People had been attracted to the Delaware Water Gap from the 1820s. The number of visitors led Anthony Dutot to build the first hotel, the Kittatinny House, there in 1829. These first people came by horse or stagecoach to hunt, fish, and rest. The development of tourism, however, really began after the Delaware, Lackawanna and Western completed its line through the area. Artists, particularly in the latter 1850s, came

48. Miller, "Drinker's Beech," *The Villager* (Moscow, Pennsylvania), October 29, 1970; G. Ellis Miller to David Leung (Scranton), September 9, 1980, letter in the Lackawanna Historical Society, Scranton, Pennsylvania; Murphy, *Jubilee History,* I:490; Interview of June Davis by Berle Clemensen, February 13, 1989.

49. Hitchcock and Downs, *History of Scranton,* II:368; Appel, et al., *History of Monroe County,* 77, 79, 85; Delaware, Lackawanna and Western Railroad Company, *Annual Report of the Delaware, Lackawanna and Western Railroad Company For the Year Ending December 31, 1900,* 6; "The Bells Ring the Message of Progress," 40.

to the Water Gap to paint the natural beauty. Individuals in the East Coast cities, who viewed their paintings, were attracted by the scenery and began to vacation there. As the number of vacationers increased, more hotels were built. In 1872 Luke Brodhead constructed the Water Gap House on the hill above Kittatinny House. Soon four other guest accommodations were completed. By 1895 twenty hotels were located in the Water Gap. Since most businesses before 1900 did not grant vacations to employees, the populace who came to the Water Gap were individuals or families of means.[50]

By the mid-1870s the Poconos began to develop as a vacation area as well. The Pocono Mountain House near Mount Pocono was built at that time. Toward the close of the 1880s Cliff House was erected in Cresco. Even Tobyhanna and Gouldsboro entered the vacation hotel business by the late 1880s.[51]

The rising interest in vacation sites prompted the Delaware, Lackawanna and Western to begin to issue advertising booklets in 1893. These booklets began with a description of the passenger cars which afforded a comfortable ride to the desired holiday location. A warning noted that the demand for rooms was such that hotels were booked months in advance. The air in areas from Water Gap to Elmhurst was said to be pure and cool, which would benefit those persons with asthma and hay fever. Another advantage came from a dearth of mosquitoes and malaria. Recreation consisted of walking, riding horses, boating, fishing, and viewing the "unrivalled scenery." The description of "unrivalled scenery" must have shocked most vacationers by the 1880s after the lumbermen had their way with the woods. The second growth of trees did not amount to much until 1920. In 1893 a single ticket from New York City to Delaware Water Gap cost $2.55. To reach Elmhurst the cost rose to $4.20. The issuance of these booklets undoubtedly promoted ridership on the DL&W as well as increased interest in the area.[52]

By 1900 resorts were developed in competition with hotels. The first of these vacation accommodations were projects of the Quakers. These included the Pocono Manor and Pocono Lake Preserve in the Mount Pocono area. At Cresco in 1901 the Society of

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50. *Monroe County – History Legacy*, 16; Appel, *History of Monroe County*, 54, 98-99; Keller, *History of Monroe County Pennsylvania*, 267-268, 465. See also William C. McFadden, "A History of the Resort Industry at Delaware Water Gap" (Delaware Water Gap National Recreation Area, Pennsylvania, March 18, 1970).

51. Appel, et al., *History of Monroe County*, 99-100.

52. Delaware, Lackawanna and Western Railroad Company, *Summer Excursion Routes and Rates, 1893* (N.Y.: Passenger Department, 1893), 14, 47, 54, 63.

Friends built the Buck Hill Falls Inn. The advertisement for this resort stated "no consumptive or other person against whom there is a reasonable moral, social, racial or physical objection will be admitted." Despite the selectiveness of clientele, the resorts offered much greater recreational opportunities than the older hotels. In addition to walking, riding a horse, boating, and fishing, the resorts added camping, swimming, tennis, and golf. The summer resort vacation proved so alluring that, by 1910, the resorts added winter sports. Winter attractions included sleighing, skating, skiing (both downhill and cross country) and tobogganing. Resorts also promoted the Poconos into a honeymoon capital. The resorts provide a major year-round vacation attraction to this day. As more middle class families received vacation time after 1900 and journeyed to the area encompassing Delaware Water Gap to Elmhurst for recreation, the wealthy began to desert the hotels and resorts in favor of permanent summer residences. Here the families would stay throughout the summer, while the father journeyed from New York to spend the weekend. Transportation by rail to these areas, however, began to decrease by the late 1920s in favor of the automobile.[53]

The impact of the opening of the Delaware, Lackawanna and Western line between Scranton and Slateford Junction caused the area to grow and supported its economic base whether it was lumbering and tanning, manufacturing, ice, or tourism. Only motorized vehicles would end that domination. Industrialization and manufacturing never really captured the area. The overwhelming number of DL&W trains which passed through the region did not stop, for little business derived along that section of track. Scheduled small, daily local freight and passenger trains were all that were needed to accommodate the local business. Most coal, freight, and passenger trains had destinations of New Jersey, New York City, or Buffalo, for the preponderance of DL&W business centered elsewhere.

53.. Appel, et al., *History of Monroe County, 164; "The Bells Ring the Message of Progress,"* 3-5, 121; Keller, *History of Monroe County Pennsylvania*, 281-290.

CHAPTER 3
MAINTENANCE OF WAY

The hardest work on the railroad involved track maintenance, but at the same time it was the most necessary work. Without proper track maintenance a railroad would soon cease to operate or at the least to operate effectively. Since the Delaware, Lackawanna and Western management placed a great emphasis on track maintenance and thus gained the reputation of having one of the best maintained lines in the country, the work day of the maintenance crew was filled with laborious tasks. The hierarchical arrangement, by which the maintenance of way was accomplished, had the track divided into districts. Each district was headed by a superintendent who acted in an administrative capacity. Roadmasters ranked in authority under the superintendent for specified areas of track. A roadmaster stationed in Scranton had authority over the trackage between Binghamton, New York, and Slateford Junction. He was responsible for maintenance of roadbed, track, fences, right-of-way, and station grounds. The roadmaster would ride over his portion of the line each week in a passenger train. While on this excursion, he would detect any rough spots in the track and submit orders for their repair. Each month the roadmaster examined all cuts, fills, and tunnels for stability. Every two months he inspected all interlocked switches and every three months tested all gauge and levels. Next in succession came the section foreman who had charge of the actual work of track maintenance. Under his authoroity fell the section crew and track walker. Section crews, including the foreman, comprised six men from the spring until late December. Two of the six men would be laid off in winter. A section crew maintained track for a distance of three miles. If there were three or four tracks in that distance, the crew would actually have a total of nine to twelve miles of track to maintain. In addition to the regular section crew, extra men were hired for maintenance work in the summer. With their own foreman, they worked in gangs of thirty to forty men who ranged over an area as much as thirty miles and helped the section crews replace rails and ties as well as renew the ballast.[1]

One other important maintenance of way worker under the section foreman's supervision was the track walker. From the earliest days of the DL&W to the early 1930s,

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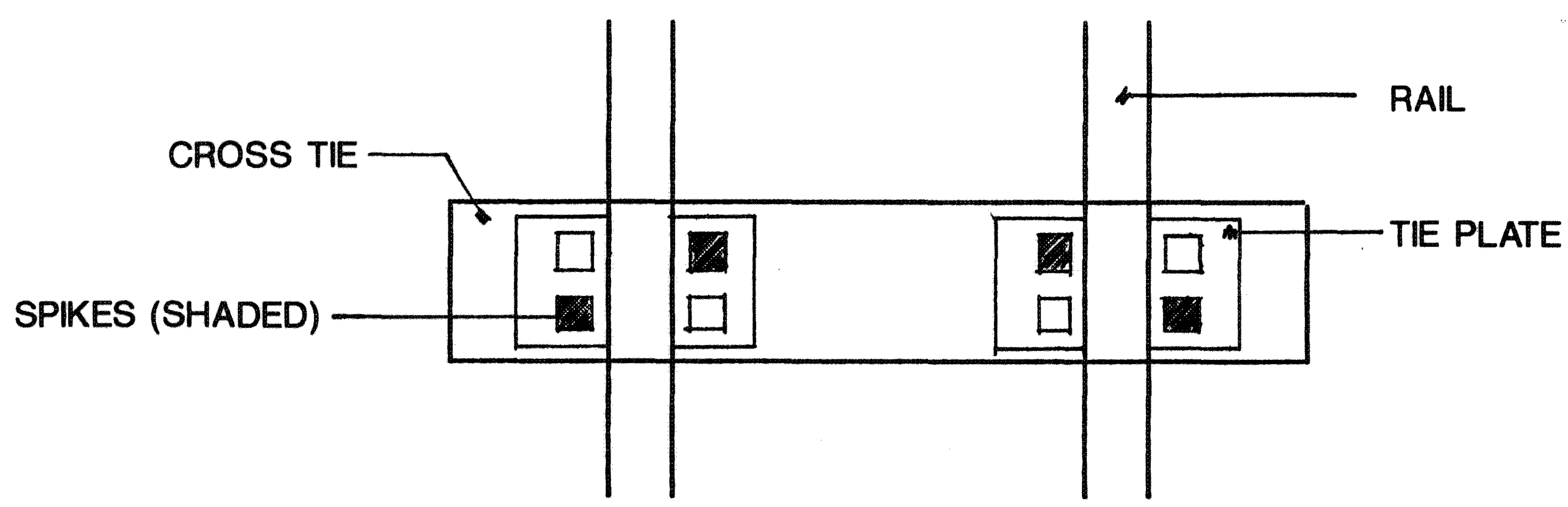
1. Willard, *Maintenance of Way and Structures*, 16-25; Interview of Joseph Finan, DL&W section crew laborer, by Berle Clemensen, May 23, 1989; Interview of Fred Hall by Berle Clemensen, February 14, 1989; Interview of George Karabin by Berle Clemensen, May 19, 1989; "Machines Replace Railroad Men," *The Pocono Record* (The Stroudburgs, Pennsylvania), June 13, 1970.

track walkers covered the same three miles of track as the individual section crews. Each day, every day of the year, a track walker would cover the assigned three miles. In the course of his walk, he would look for broken rails and ties, missing or loose bolts in splice bars, rock slides, the condition of highway crossings, switches, frogs, signals, culverts, bridges, fences, and telegraph lines. Since train movements produced a slight undulating motion on the track, spikes would gradually lift over time and the nuts on splice bar bolts would work loose. As a result, a track walker carried a spike hammer with him to drive loose spikes and a wrench to tighten loose nuts. If he spotted a serious problem, the track walker would report it to the section foreman. The day of the track walker ended in the 1933-35 period. Two men with a motorized patrol car superseded the track walker. These men would begin their patrol from Scranton at 7:00 a.m. and cover the track to Slateford Junction. Along the way, they would look for the same potential problems as had the track walker. If they observed anything unusual, they would report it to the roadmaster who, in turn, would contact the section foreman for the area. The motorized patrol introduced a new element for which a track walker had no concern. Having a motorized patrol car meant that they had to be aware of train movements. To receive such information, the two men would periodically have interlocking tower men contact the train dispatcher by telegraph. At the same time, they would notify the dispatcher of their location. Another group of track walkers covered the Nay Aug tunnels and presumably the Paradise tunnel before its conversion to a cut in 1903. These men worked three shifts around the clock. They walked the tunnels every hour on the hour and punched a time clock with a key at the end of each walk. Their duties included cleaning the soot from the rails. In addition, since water dripping from the tunnels' roofs mandated the use of sand to overcome wet, slippery rails, these track walkers removed the sand buildup from the tracks. In winter they also removed the ice accumulation from the tunnels.[2]

Section work was accomplished with a regular system. Each part of the maintenance of way work had a season best suited for it. To gain an appreciation of section work, one must first understand how a line was constructed. A roadbed provided the foundation for the track. When built, it was properly leveled by making cuts and fills. The roadbed was then graded to form a higher center to allow suitable drainage. The DL&W used a five-

2. Interview of Joe Finan by Berle Clemensen, May 23, 1989; "Machines Replace Railroad Men," *The Pocono Record* (The Stroudburgs, Pennsylvania), June 13, 1970; "Rails Were Better Kept by Steel-drivin' Men, Lord, Lord," *The Pocono Record*, (The Stroudburgs, Pennsylvania), April 18, 1978; Willard, *Maintenance of Way and Structures*, 21; *Manual of Recommended Practices for Railway Engineering and Maintenance of Way Containing the Definitions, Specifications and Principles of Practice Adopted and Recommended by the American Railway Engineering and Maintenance of Way Association* (Chicago: American Railway Engineering and Maintenance of Way Assn., 1907), 66.

inch crown on its roadbed. Crossties were laid on the roadbed and topped with tie plates so that, when placed, the rail did not rest on the tie. Such a situation was not the case in the nineteenth and first decade of the twentieth centuries when rails made contact with the crossties. Just prior to being placed on the crossties, rail anchors were fixed on the underside of the rails and then the rail sections were joined by bolting them together with steel strips called splice bars. In the 1850s the DL&W used cast iron chairs instead of splice bars to join rail lengths. The chair was spiked to a heavy crosstie and the rail ends rested in it. Having connected the rail sections, the crossties were adjusted so that the rail joints would be positioned with crossties under them. In addition, rail joints on the parallel rails were staggered so that they were never directly across from each other. Staggering the joints provided a smoother train ride and lessened the train wheel impact on the joints. Finally, before spiking the rails in place, a track gauge was used to assure gauge uniformity. Two spikes were then used to hold each rail to an individual crosstie. These spikes were driven through tie plate holes on either side of a rail with the head of the spike in contact with the rail base. A cross-spiking method was used for the parallel rails, i.e., the outside spikes on both rails were on the same center line and the two inside spikes were opposite each other as illustrated.

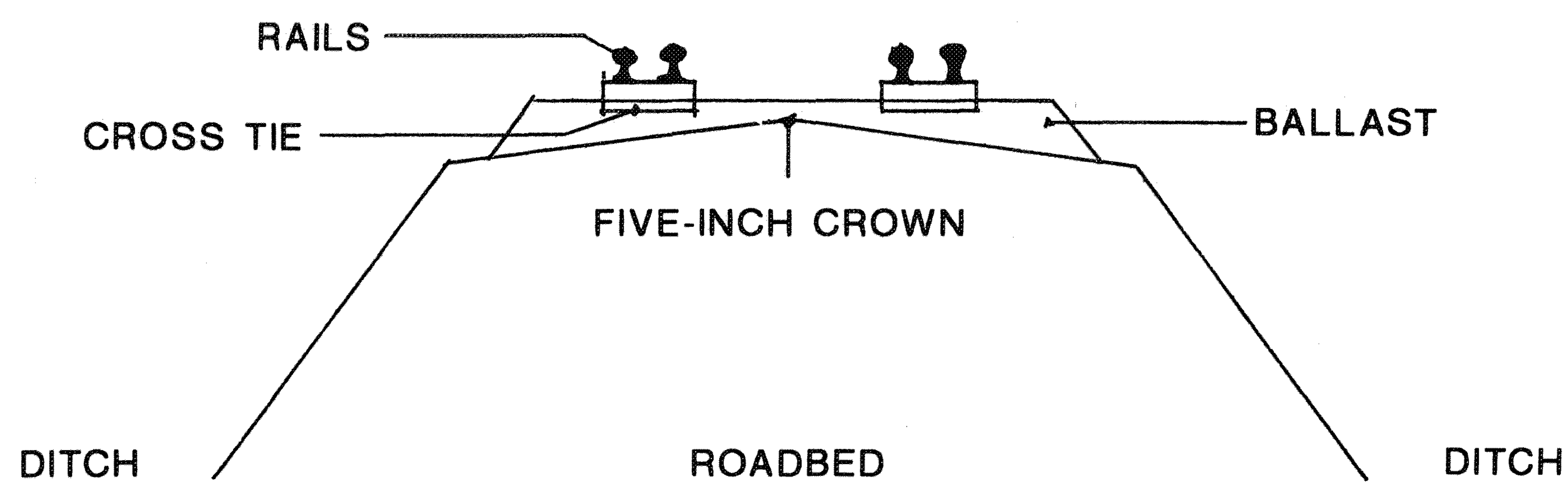


Common or nail spikes were used by the DL&W except for a fifteen year period between 1910 and 1925 when screw spikes were adopted.[3]

The final act in rail line construction involved laying ballast. In the nineteenth century ballast consisted of gravel, rocks, or cinders. A uniform 2½-inch crushed rock was adopted by the DL&W for ballast in the twentieth century. It was carried along the track in carloads and dumped. The ties were then raised several inches and the crushed rock tamped under them with tamping bars. In the mid-1920s pneumatic tampers (similar to jack hammers) came into use. The ballast had to be hard packed under each crosstie from the ends of

3. Willard, *Maintenance of Way and Structures*, 31; C.L. Addison, "Maintenance of Gauge," *Railway Age* 31 (March 15, 1901), 312.

the ties to one foot inside the rails. Only partial tamping was done under the crosstie centers to prevent the ties from becoming high centered. Ballast was then placed almost to the top of the crossties and to a point about four feet out from either side of the track where a board was used to place the ballast in a straight line. Keeping ballast in a straight line on either side of the track had a greater rationale than for a pleasing appearance. Any place where the ballast began to bulge beyond the line indicated a track problem. The use of ballast also served many other purposes such as draining water away from the crossties, holding the ties in place, transmitting the load of a train from the crossties to the roadbed, reducing the heaving of the track from the action of frost, allowing track resurfacing without disturbing the roadbed, and retarding the growth of vegetation along the track. When completed a double tracked roadbed had the appearance of that shown in the following cross section.[4]



Few changes occurred in the manner that the track was maintained until mechanization began to occur in the 1920s. Section crews lived, for the most part, in company housing which was situated near the area where they labored. This situation prevailed until the mid-1930s when the DL&W management divested the company of its housing. Section crews rode to work on handcars until the DL&W began to procure motorized cars in 1918.

As stated, various aspects of section work usually occurred on a seasonal basis. Most of the maintenance work occurred in the spring and summer. The track was disturbed as little as possible in winter, for frozen ground did not lend itself to proper maintenance work. In the spring before the frost left the ground, construction trains would distribute ties and rails to each section based upon requests by the section foreman. At the point when the frost left the ground, the section gang covered the entire section and with the help of the extra seasonal gang would replace first the damaged ties and then rails. Ties were

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4. Willard, *Maintenance of Way and Structures,* 31, 48, 53, 55, 345; Dudley, "Some Features of the Present Steel Rail Situation-I," 8; Interview of Joseph Finan by Berle Clemensen, May 23, 1989.

removed, after the spikes were pulled and the rail jacked up, by slipping it from beneath the rail. The new crosstie would be installed in the same manner. In the nineteenth century, when rails were laid directly on crossties, the part of the tie beneath the rail would be adzed to give a level area for the rail. By 1910 tie plates were placed on the crosstie and the rail lowered onto the tie plate. Spikes would then be driven to hold the rail in place. They had to be driven vertically and placed at least several inches back from the end of the tie to avoid splitting the tie. Any spike accidently driven at an angle could not be straightened for in so doing the hole in the tie would be enlarged and thus allow the spike to loosen easier. One man on the section crew would usually be more proficient than the others at driving spikes vertically, so the section foreman usually relied upon that individual to set the spikes. When the DL&W used screw spikes in the 1910-25 period, a short hole was predrilled in the tie. This made it easier to start the screw spike in the tie and kept the tie from splitting. In the nineteenth century the DL&W relied upon wrought-iron spikes. It used a combination of steel and wrought-iron spikes until the 1930s when mainly steel spikes were used. After driving the spikes, the crosstie would be raised with the track jack about an inch and ballast would be tamped under it until the rails were level. As the final act of tie replacement, a date nail would be driven into the crosstie in the area between the rails.[5]

Worn rails were replaced after the crosstie work was complete. Rail life depended upon whether it was located on a curve, grade, or level area. Those rails on level areas lasted longer. Rails were usually removed when the top of the head had worn a quarter inch or when the inner side of the head had worn an eighth inch. The extra, seasonal workforce usually handled most of the rail renewal. In removing old rails, the spikes were usually taken only from one side of the rail. The spike holes were then plugged so that redriven spikes would hold tight. After the splice bars were detached, the old rail would be lifted with rail tongs and placed along the side of the track. It usually required sixteen men to accomplish that task. Rail anchors were removed and placed on the new rail. The new rail would then be laid in place. A track gauge, which was a wooden crossbar with metal end pieces, would be placed squarely across the track to bring the rails into a proper gauge of 4 feet 8½ inches. Because rails, whether iron in earlier times or steel, would expand and contract with the temperature, they had to be gaped at the joints. If rails were laid without a proper gap, such as butting them squarely together in cold weather, expansion

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5. Willard, *Maintenance of Way and Structures*, 156-157, 180-181, 336-339; Interview of Joseph Finan by Berle Clemensen, May 23, 1989; Interview of Fred Hall by Berle Clemensen, May 23, 1989; Addison, "Maintenance of Gauge," 312.

could force the rails out of alignment. As a result, a track thermometer would be laid on the rail head and shaded to get the correct rail temperature. Having ascertained the rail temperature, the correct wooden gap gauges would be placed between the rail joints. The table for leaving the proper space between rail joints stated:

–20° to 0°	space width of 5/16 inch
0° to 25°	space width of 1/4 inch
25° to 50°	space width of 3/16 inch
50° to 75°	space width of 1/8 inch
75° to 100°	space width of 1/16 inch
over 100°	space close to bumping

Once the gauge and joint gap had been set, the splice bars were attached, but with only half the number of bolts. Then the rail would be spiked to the crosstie, and the track gauge and wooden gap gauges removed. The remainder of the splice bar bolts would be inserted and tightened. Splice bars were bolted across the rail joints with the nuts alternating on the inside and outside of the rail (see figure 23). Safety prompted alternating the splice bar bolt nuts. In case of a derailment the wheels could cut off the nuts, but only on one side of the rail, thereby half the bolts would remain to hold the rails together. With the splice bars tightened, the rail replacement was complete. Any disturbed ballast would be replaced. When dealing with rails renewed on a curve, the workforce carried a rail bender with them and bent the rail to fit the curve. Since rail replacement on a busy line could prove hazardous, the section foreman had to keep the train dispatcher constantly notified of the work location. The last year the DL&W employed large summer work crews for track maintenance was 1949. After that date machines were used to replace rails and ties. By the mid-1950s the DL&W maintenance crews began to weld rails in mile-long sections. One of the two sets of track between Moscow and East Stroudsburg was welded in this manner. It was removed by Conrail about 1980.[6]

A work train followed the maintenance crew and gathered the old rails and ties. Those ties and rails determined to have some use were laid on sidings, spur lines, or in yards where train speed was slow. Those rails deemed useless to the DL&W were sold.

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6. Willard, *Maintenance of Way and Structures*, 142-149, 340-342; Addison, "Maintenance of Gauge," 312; "Instructions for Laying Rails," *The Engineering Record* 65 (April 6, 1912), 291; *Manual of Recommended Practices for Railway Engineering and Maintenance of Way*, 55; Interview of Joseph Finan by Berle Clemensen, May 23, 1989; "Rails Were Better Kept by Steel-drivin' Men, Lord, Lord," *The Pocono Record* (The Stroudsburgs, Pennsylvania), April 18, 1978.

At times other railroad line owners would purchase them. Most often they were sold to an iron and steel company where they would be rerolled. Scranton Bolt and Nut Company often purchased old rails for rerolling.[7]

Having replaced worn ties and rails, a section crew's attention turned to the overall track which would be relined, resurfaced, and reballasted. Relining the track meant checking the gauge over the entire section. Gauge uniformity was critical for safety. Two forces tended to widen track gauge. The first, a lateral force, came from the pressure of the wheel flange on the point of rail contact. This pressure was particularly acute on curves where centrifugal force caused greater wheel flange contact with the rail. Wheel flange contact was also augmented by the sway of imperfect equipment. The second force was vertical and came from the weight or load of a train. The weight of a train caused the crossties under rails to compress at the outside edge of the rail and thus over time the rails would have a canted angle. This outward slant would widen the gauge. The section crew would check the gauge by placing a wooden crossbar which had metal end pieces, set for 4 feet 8½ inches, squarely across the track. Called a track gauge, this instrument revealed any disturbance to the gauge. To correct the first problem, the rails would be moved together slightly while rail cant would be rectified by shaving the tie under the tie plate to make a flat surface.[8]

Resurfacing was actually a continuous process. Low spots would develop in areas with compression from the weight of passing trains. When such a section of track was discovered by using a level, it would have to be elevated to make the rail surface level with the rest of the track. If left unattended, a roller coaster effect would occur. The rails would be levelled by raising the track, usually not more than two inches, with a track jack placed on the outside of a rail. Ballast would then be tamped under the ties. The average annual lift given to the track by DL&W section workers to restore it to its original elevation would be 1½ inches. By the 1950s a machine accomplished this task.[9]

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7. Willard, *Maintenance of Way and Structures*, 340; Rails, Ties and Switch Timber, December 1897 to December 1900, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL.

8. Addison, "Maintenance of Gauge," 312-313.

9. Willard, *Maintenance of Way and Structures*, 344; H.C. Landon, "Maintenance of Line," *Railway Age*, 31 (March 15, 1901), 305-306; "Delaware, Lackawanna and Western Railroad Company, Report of Field Inspection," Memorandum to Mr. Hood from L.H. Allen, P.M. Guyer, and F.P. Cahill, June 1932, Field Notebook 45, Box 636, RG 134, ICC.

Reballasting was designed to accomplish two things. Ballast became hard packed after several years and lost its elasticity. It was better for a train to run over tracks which had a slight give to them. As a result, the ballast would need to be removed and replaced to keep the elasticity. At the same time ballast would become dirty from cinders and blowing dust. In this condition proper drainage would be inhibited and vegetation growth would be encouraged. The Delaware, Lackawanna and Western labor force removed, cleaned, and replaced the ballast on the main line every four to five years. In the early years of operation, the track would be raised and new ballast would be placed over the old. A new method was devised by the 1870s. The ballast would be removed by the workmen using shovels. Forks would then be used to replace it to prevent returning the dirt with the ballast. By 1910 the ballast was still removed by shovel, but it was then screened and replaced. In the 1920s a less labor intensive solution for reballasting was achieved. A steam-powered crane was used to scoop up the ballast and place it onto a screen. The dirt would fall through the screen and be conveyed to a gondola car while the ballast fell back on the track. Ultimately, after the Second World War, the crane was replaced by a machine which could skim the ballast from the ground, convey it over a screen, and drop it back along the track. This ballast cleaning machine could move over one to one and a quarter miles of track in an hour. It required only two to three men to operate. Once the ballast had been cleaned, it would be aligned once more about four feet outside the rails. This practice of aligning the ballast ended in the 1950s and it was allowed to scatter about the edges of the roadbed.[10]

At the conclusion of reballasting, the section crew turned its attention to cleaning the ditches and to vegetation removal. Proper drainage was important to maintaining a sound track, so in addition to clean ballast, clean ditches also promoted drainage. In winter, dirt would accumulate in the side ditches, especially in cuts, so this dirt had to be removed as well as any accumulation over the course of the summer. In the fall, ditches were given a final cleaning before winter. Weeds were pulled by hand or in heavy growth areas the weeds and grass were scythed. Machete type knives would be used to cut brush. The cut vegetation was raked and burned to reduce the fire hazard. Hot carbon balls up to one inch in diameter could be blown out of a steam engine and ignite dry vegetation. Following the Second World War vegetation was killed by spraying it with a strong weed killer

10. Willard, *Maintenance of Way and Structures*. 55; "Delaware, Lackawanna and Western Railroad Company, Report of Field Inspection," Memorandum to Mr. Hood from L.H. Allen, P.M. Guyer, and F.P. Cahill, June 1932, Field Notebook 45, Box 636, RG 134, ICC; Interview of Fred Hall by Berle Clemensen, May 23, 1989; Interview of Joseph Finan by Berle Clemensen, May 23, 1989; *The Pocono Record* (The Stroudsburgs, Pennsylvania), June 13, 1970.

sprayed by compressed air from a tank car. The weed killer was probably 2-4-D. In 1956 the DL&W contracted to have vegetation commercially sprayed. Also in the post World War II period a bulldozer was used to remove brush from the right-of-way. Hard work had its rewards; the railroad would give monetary awards at the end of the summer season to section crews who had the best maintained sections.[11]

Section crews had to keep rail joints and splice bar bolts free of rust. Rust in the joints could block the gap and cause the rail to buckle during hot temperatures when rails expanded. To keep the rail joints and splice bar bolts rust free, the section crew painted oil on those parts by hand. After the Second World War, oil in fifty gallon drums was carried on a small flat car and sprayed on both sides of each rail. Oil was obtained from the oil house in the Scranton Yard.[12]

In addition to their work, section crews were required to give any passing train a visual inspection. If they observed something wrong, such as smoke coming from a wheel because of a hot box, or something about to fall off, the section foreman could notify an interlocking tower operator. To do so, he used a pole which had two metal fittings near the end. When the pole was placed across the telegraph wires, the metal fittings would touch the wires. The foreman could then attach a telegraph key to the pole and transmit a message. The interlocking tower operator could deliver the message to the train engineer by fixing a paper to a hoop attached to a Y-shaped stick. The hoop was extended from the tower's second story window on the end of the stick. To receive the message, the passing engineer put his arm through the hoop which detached from the stick.[13]

In winter the track was disturbed as little as possible with repairs. The frozen ballast did not lend itself to proper maintenance. Section crews, however, still had to replace any broken rails and splice bars. For emergency use, rails were stored on racks along the line every fifteen to twenty miles. These racks, which consisted of ties, usually contained as many as thirty rails. Another frequent job in winter was keeping the track level. In that

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11. Willard, *Maintenance of Way and Structures*, 40, 338; W.B. Parsons, Jr., *Track: A Complete Manual of Maintenance of Way* (N.Y.: Engineering News Publishing Co., 1886), 105; *The Pocono Record* (The Stroudsburgs, Pennsylvania), June 13, 1970; Interview of Fred Hall by Berle Clemensen, May 23, 1989; Interview of Joseph Finan by Berle Clemensen, May 23, 1989.

12. Interview of Joseph Finan by Berle Clemensen, May 23, 1989.

13. Interview of Wendell Taft, an Erie and an Erie Lackawanna employee, by Berle Clemensen, May 24, 1989; Willard, *Maintenance of Way and Structures*, 28.

season the water from snow melt would be trapped in the ballast and freeze. If enough water were present, the ice could raise the track. Because of various moisture contents at different points, the track could bulge more at one point than another. As a result, the lower area required shimming to bring it into line with the higher spots. In the nineteenth century shims consisted of hardwood strips of various thicknesses from 1/8 to 1½ inches. The appropriate size would be placed between the rail and crosstie. By the twentieth century metal shims came into use. With the adoption of tie plates, the metal shims were placed between the tie plate and crosstie. These shims would be removed in the spring when the ice melted. Snow removal was another section crew job. The men would shovel any snow from the tracks not removed by a snow plow. In addition they would clean ice and snow from signal lenses, frogs, switches, water stations, and the sides of cuts. They also placed salt on switches and frogs.[14]

Although a track walker and later the patrol men examined bridges in the general course of their work, a thorough inspection was made twice per year by a bridge engineer. Any needed repairs were not made by the section crew, instead a special bridge repair gang was utilized for such tasks. The Interstate Commerce Commission in 1932 estimated that the total service life for steel bridges, reinforced concrete viaducts, and arched culverts on the DL&W was seventy years. An ICC inspection in 1932 revealed "considerable deterioration" on concrete placed between 1900 and 1910. The Delaware, Lackawanna and Western management, however, had begun an extensive program to gunite concrete abutments and piers. For at least the first third of the twentieth century, the DL&W painted the steel on its bridges with Lowe Brothers red lead paint. In the 1940s and 1950s the company used Dutch Boy red lead paint.[15]

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14. Willard, *Maintenance of Way and Structures,* 337-338, 354-355; Parsons, *Track,* 102; Interview of Joseph Finan by Berle Clemensen, May 23, 1989.

15. "Delaware, Lackawanna and Western Railroad Company, Report of Field Inspection," Memorandum to Mr. Hood from L.H. Allen, P.M. Guyer, and F.P. Cahill, June 1932, Field Notebook 45, Box 626, RG 134, ICC. Paint specifications for bridge steel was obtained from various bridge drawings.

CHAPTER 4
TRAFFIC AND TRAIN OPERATION

Most trains operating in the area between Scranton and Slateford Junction passed through the region carrying freight or passengers on a regular nonstop schedule. The preponderance of traffic originated or terminated in the main centers of Buffalo, New York, Scranton, Pennsylvania, and Secaucus and Hoboken, New Jersey. Even in the nineteenth century where an industrial base of lumber products and tanned leather existed in the Moosic and Pocono mountains, the main focus of Delaware, Lackawanna and Western traffic was elsewhere. Most of the freight was comprised of anthracite coal which originated in the Scranton area and in the Winton and Kingston districts to the northeast and southwest of Scranton. At times in the nineteenth century anthracite embodied upwards of seventy-five percent of the freight hauled. By 1900 it comprised fifty-five percent of the total freight. It was not until 1906, after DL&W President William Truesdale began to seek a diversified freight business, that anthracite dropped below fifty percent of the freight operation. Throughout most of the railroad's existence, however, anthracite freight proved to be the main source of income. Even in 1940 it provided the DL&W with thirty percent of its freight. By the end of the Second World War anthracite haulage began a rapid decline. In 1947 anthracite was carried in only 15.5 percent of the freight cars moved over the line.[1]

Although freight other than anthracite did originate along the DL&W route, connections with ports and other railroads provided the source of much of the other products hauled. Most industries served by the DL&W were located in New York and New Jersey. In 1901 goods other than anthracite originating along the DL&W line comprised hay, fruits and vegetables, poultry, milk, hides and leather, iron products, lumber, sand and stone, cement, agricultural implements, wagons, furniture, glass, beer and wine, silk fabric, industrial boilers, and ice. By the time of the First World War, the effects of President Truesdale's encouragement to industry to establish along the route brought such additional products to the line as jewelry, toilet articles, shoes, industrial machinery, typewriters, automobiles, chemicals, pottery, knit goods, textiles, bathroom fixtures, and salt. In the period after the Second World War, automobile manufacturing ended along the route, but

1. "White Elected D.L.&W. President," *Railway Age* 109 (December 7, 1940), 871; Annual Report of the Delaware, Lackawanna and Western Railroad to the Interstate Commerce Commission For the Year Ended December 31, 1947, Corporate Records of the Delaware, Lackawanna and Western Railroad Company, GARL.

new products included asphalt, boxes, vegetable oil, paint, drugs and medicine, paper products, and candy.[2]

A large percentage of the Delaware, Lackawanna and Western's twentieth century freight came from its terminal connections with the railroads and ports in New Jersey and Buffalo, New York. From its links with the Nickel Plate and Wabash Railroads at Buffalo as well as Great Lakes shipping came large quantities of wheat, corn, oats, barley and rye as well as flour and livestock. Much of this freight was taken to the New Jersey ports for export. At the same time a large amount of anthracite coal was carried to Buffalo. From its New Jersey ports the DL&W procured such imports as coffee, fresh bananas, crude rubber, and fertilizers. President Truesdale developed ties with the New York, New Haven and Hartford Railroad by way of the Lehigh and Hudson River Railroad at Port Morris, New Jersey. This move provided an entrée to the New England states, especially for coal shipments. In Pennsylvania the DL&W connected with eight other railroads from which it interhcanged freight. In Scranton these lines included the Delaware and Hudson Railroad, Erie Railroad, Lackawanna and Wyoming Valley Railroad (Laurel Line), and the New York, Ontario and Western Railroad. Near Scranton at Taylor, the DL&W joined with the Central Railroad of New Jersey. At Pittston Junction it tied with the Lehigh Valley Railroad. Near the Delaware River at Portland, it connected with the Lehigh and New England. At two points along the DL&W's Bloomsburg division, West Nanticoke and Northumberland, it made contact with the Pennsylvania Railroad.[3]

Passenger service evolved in the nineteenth century into a systematic routine by 1899. At first the DL&W offered only local service. Through passenger service between New York City and Buffalo began on May 14, 1883 soon after the track was extended to that Lake Erie port. When William Truesdale became DL&W president in 1899, he did not change the established pattern. Each day sixteen passenger trains passed along the corridor between Scranton and Slateford Junction. Half of them originated in Buffalo and half came from the Hoboken, New Jersey terminal. Only half of these trains made stops

2. Delaware, Lackawanna and Western Railroad Company, *Annual Report of the Delaware, Lackawanna and Western Railroad Company For the Year Ending December 31, 1901*, 20; Annual Report of the Delaware, Lackawanna and Western Railroad to the Interstate Commerce Commission For the Year Ended December 31, 1947; Engineering Report Upon the Delaware, Lackawanna and Western Railroad, Vol. I, Inventory as of June 30, 1918 – revised June 30, 1926, ICC.

3. Engineering Report Upon the Delaware, Lackawanna and Western Railroad, Vol. I, Inventory as of June 30, 1918 – revised June 30, 1926, ICC; Annual Report of the Delaware, Lackawanna and Western Railroad to the Interstate Commerce Commission For the Year Ended December 31, 1947; Tabor, *The Delaware, Lackawanna and Western Railroad*, Part I, 221.

in the stretch between Scranton and East Stroudsburg. By 1902 the "accommodation" train also made a round trip from Tobyhanna to Scranton carrying men to work in Scranton and home in the evening. It began at 7:05 a.m. from Tobyhanna and, after various stops, arrived in Scranton an hour later. On the return, the "accommodation" left Scranton at 6:10 p.m. and terminated in Tobyhanna at 7:15 p.m.[4]

Although Truesdale did not attempt to improve upon the DL&W passenger train schedule, he did begin an advertisement campaign, with the development of the fictional Phoebe Snow, to increase ridership. He hired Wendle Colton to develop the campaign. Since the DL&W used anthracite, a coal of few impurities and high carbon which burned without smoke or soot, in its passenger train locomotives, Truesdale and Colton decided to emphasize the cleanliness aspect of travel. Colton first produced attention-getting jingles followed by the introduction of a girl dressed in white called the "Maid of Lawn" who remained unsoiled on the DL&W. In 1902, about a year after the introduction of the campaign, Colton named the girl "Phoebe Snow." She appeared along with a jingle on posters and car cards until the DL&W discontinued using anthracite for fuel in its passenger trains in 1917. The campaign worked, for ridership did increase, especially in summer as people began to throng to the Water Gap and Poconos for vacations. These passenger trains usually consisted of seven to twelve cars pulled at a speed of seventy miles per hour. Except for the Lackawanna Limited, the DL&W management did not name its passenger trains until approximately 1940. At that time the Lackawanna Limited became the Phoebe Snow. Other names included the Owl, Twilight, Westerner, New Yorker, Merchants Express, and Pocono Express. Unlike some other railroads, the DL&W continued to profit from its passenger business until the mid-1950s. By the late 1950s, passenger service began to decline although the company continued to operate fourteen trains. The great decrease came in the 1960s after the merger with the Erie. The new management lacked interest in maintaining a passenger service. The last passenger trains ceased operation on January 4, 1970.[5]

Both freight and passenger trains ran on regular schedules. By adhering to schedules the railroad functioned on a smooth basis even though many types of trains functioned on the line. Certain trains had superiority over others on the basis of right, class,

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4. Tabor, *The Delaware, Lackawanna and Western Railroad*, Part I, 5, 149, 153-154.

5. Tabor, *The Delaware, Lackawanna and Western Railroad*, Part I, 150, 167, 177; Tabor, *The Delaware, Lackawanna and Western Railroad*, Part II, 392-400.

or direction. When a superior train overtook one of lower class, the train of lower class had to pull onto a siding to clear the track. The highest class was given to through passenger trains. Next in order were fast freights followed by slow freight trains. Local passenger and freight trains held the lowest class. It was only on those occasions when trains ran late or missed a signal that the potential for problems appeared.[6]

Passenger trains had fewer complications connected with them. Whether through or local trains they usually contained the same number of cars each day and adhered to their assigned schedule. Freight trains on the other hand had to be made up or classified for destination. Dispatchers controlled all train movements and remained informed of their locations. Three dispatchers regulated trains in the Scranton area. Located in the Scranton passenger station, now the Royce Hotel at Lackawanna Station, one dispatcher governed the Bloomsburg line, another controlled the Scranton to Hoboken, New Jersey route, while the third dispatcher governed the Scranton to Binghamton, New York trackage.[7]

In the twentieth century the Scranton yard was used to assemble freight trains other than those which hauled coal. The make-up of freight trains which would run from Scranton through the Moosic and Pocono mountains to Hoboken required skilled workers. If, for example, two freight trains were steaming to the Scranton yard from Buffalo, New York, to the north and from Northumberland, Pennsylvania, on the Bloomsburg line to the southwest, each with some freight cars destined for Hoboken, the following situation would prevail. The chief dispatcher, located in the Scranton passenger station, would receive information prior to the trains' arrivals of the number of cars, their weight, and destination. Having obtained that data, he would contact the trainmaster and advise him of the assembling of a train for Hoboken, the number of cars, and the weight. The trainmaster would then select the proper motive power to make the trip. His choice would include a locomotive and pusher engines, for the grade outside the Scranton yard necessitated extra power to climb it. The chief dispatcher would, in turn, notify the yardmaster of the trains' arrival times, the number of cars to be assembled for a Hoboken train, and the trainmaster's motive power selection. The yardmaster would then order a switching crew (usually three men) to remove the Hoboken bound cars from the two arriving trains and assemble them into one train for transport to New Jersey. At the same time, the dispatcher would call the roundhouse

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6. Interview of John McCrone, former DL&W employee, by Berle Clemensen, May 24, 1989.

7. Interview of Wendell Taft by Berle Clemensen, May 24, 1989; Interview of Chris Ahrens by Berle Clemensen, May 22, 1989.

foreman to have a hostler ready the designated locomotives with coal, water, and adequate steam. In the meantime, the dispatcher would tell the crew caller to notify a train crew (engineer, fireman, conductor, two brakemen, and a flagman) as well as the pusher locomotive engineers and firemen that they were needed to operate a train. The train crew was usually given notice two hours before departure time. Before 1933, the crew caller would send a call boy to the men's homes to inform them of impending duty. When telephone service connected these homes by 1933, the crew caller would telephone the train crew.[8]

The train crew along with the pusher engine crews arrived at the yard just prior to the departure time. A fast freight generally had one lead engine for motive power with two pusher engines on the rear. Of the train crew, the engineer, a head-end brakeman, and fireman rode at the front of the train while the conductor, flagman, and rear-end brakeman occupied the caboose at the rear. The conductor had charge of the train. When required, the dispatcher would convey written orders and messages to the conductor and engineer.

In the days before signals or during a signal failure, orders could include such things as the need to cross to another track at a certain mile post to avoid an area being repaired by the section crew or the mile post location to move to another track to make it possible to pass a slower moving train on the track ahead. Such an order would also include the point where the train would be switched back to its original track. Since much of the distance between Scranton and Slateford Junction contained a third track for exclusive use of slow trains, there would almost never be orders given for passing a slower moving train. If the conductor received restricting orders, he would present a copy to the engineer. Usually, however, few or no orders were written for scheduled trains in signal territory. In addition the conductor would receive way bills which were lists for the shipper, routing, destination, and contents of each car. On through freight trains, a copy of the way bills would be given to the interlocking tower operator at East Stroudsburg for telegraphing the information to Hoboken. In this way, the Hoboken yardmaster could inform the switching crew of what types of freight were coming and he could direct where each car went. On

8. Interview of Wendell Taft by Berle Clemensen, May 24, 1989; Interview of Fred Hall by Berle Clemensen, May 23, 1989; Interview of John McCrone by Berle Clemensen, May 24, 1989; Interview of George Karabin by Berle Clemensen, May 19, 1989; Interview of Chris Ahrens by Berle Clemensen, May 22, 1989; "Call Boys' Part of Rail Operations," *The Pocono Record* (The Stroudsburgs, Pennsylvania), June 15, 1970.

those trains slated to stop along the route, the conductor also received orders for picking up and setting off freight cars.[9]

Each of the train members had specific assignments. While the conductor had overall authority of the train operation, the engineer had command of the locomotive. A fireman kept the locomotive firebox supplied with coal to maintain the fire. He also kept water in the boiler to preserve steam pressure. It was crucial to keep steam pressure from fluctuating as little as possible. Beginning in the 1920s, 250 pounds psi was the ideal steam pressure. The DL&W used bituminous coal in its freight trains and anthracite in the passenger trains. Bituminous coal comprised Pittsburgh No. 8 grade which came from mines on the Baltimore and Ohio Railroad and the Wheeling and Lake Erie Railroad routes. Before the 1910s, coal had to be shoveled from the tender into the firebox. Stokers came into use by the 1910s and alleviated some of the back breaking work, but shoveling was still required. In addition, if a train were forced to make an unscheduled stop, a fireman would be sent forward of the train for up to a mile or more to flag any approaching train on the same track of the danger ahead. Brakemen performed a number of jobs. In the nineteenth century before the advent of air brakes, brakemen ran along the tops of cars to manually set or release brakes on each car. By the 1890s when air brakes came into general use, the brakeman's function changed. Riding in the head-end of the train, a brakeman would watch the track ahead. The rear-end brakeman, riding in the caboose, would keep watch for wheel smoke or sparks which would indicate a hot box (wheel bearing malfunction), stuck brakes, or dragging equipment. Brakemen performed a switching obligation on sidings. He would set a hand brake to prevent the movement of a car which had been set off. The brakeman also inspected a halted train to look for any malfunctioning machinery. The final member of the train crew, the flagman, rode in the caboose where he polished lanterns, kept a lookout from the rear of the train, and, in case of an unscheduled stop, walked for a mile or more back down the track to flag any following train of the danger ahead. On occasion, the flagman would be left behind if his train started to move once more. It would not be pleasant to be abandoned along a track in foul weather. Present day train crews consist of only the conductor, engineer, and brakeman. In some cases the modern engineer has a television camera fixed so he can watch the rear of the train and can keep in touch with other trains by radio.[10]

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9. Interview of George Karabin by Berle Clemensen, May 19, 1989; Interview of Fred Hall by Berle Clemensen, May 23, 1989; Interview of John McCrone by Berle Clemensen, May 24, 1989; Interview of Chris Ahrens by Berle Clemensen, May 22, 1989.

10. *Ibid.*

Coal trains were not assembled in the Scranton yard in the twentieth century. East bound coal trains from the Bloomsburg line, which ran into Scranton from the southwest, were assembled in the Kingston yard. They were taken to Scranton and delivered to a main line train crew at a small interchange yard known as Hyde Park. It was located just outside the west wye of the Scranton yard. Loaded coal cars from the Scranton area were collected and classified in the Hampton yard on the edge of Scranton. From this location main line train crews would staff these trains. All east bound coal trains would pass through the Scranton yard. East bound coal trains required more pusher and helper locomotives than other trains to climb the grade out of Scranton. These full tonnage trains usually had two head engines (the regular locomotive and a helper), and three pusher locomotives on the rear. They often stopped at Nay Aug to attach more loaded coal cars which came to Nay Aug over the Winton Branch. From that point coal trains proceeded to the Hoboken, New Jersey area.[11]

No train could proceed from the Scranton yard without authorization from the dispatcher. Most freight trains including those hauling coal operated on a regular schedule. Occasionally, an extra freight would be made up. The dispatcher usually permitted it to leave behind a regularly scheduled train. In most of the distance between Scranton and Slateford Junction the line contained three tracks. The east bound track lay in the center while the slow track lay to its outer side on the right. A west bound track was located on the other side. When given the order to proceed by the dispatcher, the interlocking tower operator would be notified and that individual would have the proper switches thrown to permit the train to proceed on the desired track. Regular freights as well as through passenger trains would use the east bound track. Freights hauling coal would use the slow track because their weight prevented speed. By using the slow track the coal freight would not have need to periodically pull onto a siding to allow a faster train to go around.[12]

Leaving the Scranton yard for New Jersey, trains would soon pass through Cobb's Gap in the Moosic Mountains. Freight trains normally stopped at Throop's Tank for water. Throop's Tank, named for B.H. Throop who operated a sawmill in the area during the 1850s, was located between Nay Aug and Elmhurst at approximately mile 124.60. Obtaining water there sometimes proved difficult. Although the engineer in the lead locomotive had

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11. "Lackawanna Handles Anthracite Traffic Skillfully," *Railway Age* 83 (December 17, 1927), 1198; Interview of Fred Hall by Berle Clemesen, May 5, 1989.

12. Interview of George Karabin by Berle Clemensen, May 19, 1989; Interview of Fred Hall by Berle Clemensen, May 23, 1989; Interview of Wendell Taft by Berle Clemensen, May 24, 1989.

an agreed stopping point with the pusher engineers by which the water column would align with the locomotive tender, the exact spot was often not attained. Since steam locomotives contained no radios, the lead engineer had no means by which to contact the pusher engineers to inform them that he was not correctly aligned with the water column. If the train ran beyond the column, the lead engineer would frequently find that while he tried to back the train into alignment, the pusher engineers would still be trying to move forward. After the introduction of air brakes, the problem of coordinating push-pull between the lead and helper locomotives disappeared.[13]

Leaving Throop's Tank a train proceeded through Elmhurst and Moscow. Next came Lehigh where the pusher and helper locomotives disengaged from the train and returned to Scranton after taking on water. Following Lehigh the track passed Gouldsboro and Tobyhanna. Occasionally, a pusher engine would continue with a train to Tobyhanna. If a problem developed with a car, such as a hot box, the car could be set off at Gouldsboro on a cripple track. Here several men were employed as "car knockers." These men made minor repairs on "crippled" cars. The most common repair involved replacing wheels and wheel bearings. Beyond Tobyhanna a train stopped at Pocono Summit. The train locomotive resupplied its water here and began the downhill run to East Stroudsburg. (The stations between Throop's Tank and Pocono Summit all had water tanks. These would only be used to refill a locomotive tender if the need arose.) Coal trains proceeded downhill at no more than eighteen miles per hour to prevent burned brakes which could cause a runaway. Fast freights would travel about forty miles per hour. Before a freight arrived at East Stroudsburg, it stopped at Gravel Place just outside East Stroudsburg. Here, the engineer took on coal and water, and had the ashes removed. Gravel Place also had a cripple track where cars with problems could be left. Here a crew of six "car knockers" were also employed to repair such crippled cars. Moving on to East Stroudsburg the conductor would give the interlocking tower operator a copy of the way bills (contents of each car) for transmittal to Hoboken. Leaving East Stroudsburg a freight passed Delaware Water Gap, Slateford Junction, and Portland and crossed the Delaware River into New Jersey. About a quarter mile before each grade crossing such as Gouldsboro, Tobyhanna, and East Stroudsburg, a whistle post had been placed to alert an engineer to the need to blow the locomotive whistle. As the train would pass each interlocking tower, each operator would have the correct switches set to allow the train to remain on the main track or move it to a siding for resupply of water

13. Interview of Fred Hall by Berle Clemensen, May 23, 1989; Interview of George Karabin by Berle Clemensen, May 19, 1989.

or to set off a crippled car. In addition each interlocking tower operator would telegraph the dispatcher in Scranton to report a train's movement. In this way a dispatcher kept apprised of each train's location. If a dispatcher needed to send a message to an engineer, he would telegraph it to the next interlocking tower operator who, in turn, would attach it to a hoop on a Y-shaped stick. The engineer would then reach from the moving train, place his arm through the hoop, and receive the message. A duplicate of the message was delivered to the conductor in the caboose by the same method.[14]

The number of steam trains using the track between Scranton and Slateford Junction changed little over the years. What changed was the number and size of cars per train. Coal trains by the 1880s contained approximately forty cars of twenty to thirty tons each. Based upon the yearly anthracite production, about ten coal trains ran from Scranton to New Jersey per day. Shortly after 1900, the Truesdale administration adopted coal cars of fifty tons each. With larger locomotives as well, trains continued to average forty to fifty cars per train. Since coal production increased, it was still necessary to operate about ten trains per day until the First World War when coal production required almost double the number of trains. The wartime coal output remained the norm through the 1920s. A greatly increased locomotive size in that decade, however, permitted trains of eighty or more fifty ton cars. As a result, about ten coal trains moved over the Scranton to New Jersey route during that period. An equal number also traversed the track to Buffalo throughout each era. The drastic reduction in coal production during the 1930s depression reduced the number of coal trains by one-third. Competition from other fuels was also responsible for declining production. As a result, soon after the end of the Second World War, the DL&W no longer operated wholly coal trains. Production dwindled to the point that it was rare to haul anthracite coal by 1960.[15]

Like coal cars and trains, the non-coal freight cars and trains grew in size as well. Before 1870 freight other than coal consisted of only fifteen percent of the total freight. This figure increased to thirty percent by the early 1880s. Non-coal freight tended to be local in nature until the track to Buffalo was completed in 1882. By 1900, soon after William Truesdale became company president, non-coal freight had risen to forty-five percent. As Truesdale determined to shift the freight emphasis away from coal, freight other than coal came to predominate. By 1906 it exceeded coal. The size of cars and their numbers per

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14. *Ibid.*

15. Tabor, *The Delaware, Lackawanna and Western Railroad,* Part I, 250, 257-258, 280.

train for non-coal freight tended to be comparable to coal freight cars and trains. Since after 1900 most of the non-coal freight inclined to be through, mainline haulage, more non-coal than coal freights traversed the Scranton to Slateford Junction segment. At the height of freighting in the 1920s, as many as twenty non-coal freights moved over that section of track. Although reduced after the Second World War, sixteen freights still moved over the line in 1954. Some of these freight trains had coal cars attached. This number lessened until, before Conrail abandoned the line in 1983, only two freights used the track per week.[16]

Until 1960 two local freight trains passed along the Scranton to Slateford Junction corridor each day. One moved from Scranton east while the other came from New Jersey to Scranton. In the early 1960s local traffic was reduced to one freight. Such service ended after 1966. They delivered coal and other freight such as food stuffs and hardware while collecting freight shipments. Usually, these trains contained cars of less than carload lots (LCL) as opposed to full car shipments. The interlocking tower operator would align the switches to move the local freight to a siding where it would switch the freight car or cars destined for that station from the train and connect to outbound cars. All the cars destined for a station along the way would be connected for their drop off points. Cars to be delivered first would be placed at the rear of the train. The tower operator would notify the dispatcher of the local train's location. This train could not proceed to the next station without authority from the Scranton dispatcher. When a track cleared, the local's engineer was empowered to proceed by the dispatcher who telegraphed the message to the engineer through the interlocking tower operator. That tower operator would then set the switches and signals to allow the local freight onto the main track and also notify the dispatcher when the train left. A local milk train which operated from Binghamton to Hoboken would stop at Moscow and East Stroudsburg each morning and evening until the trucking industry began to haul milk by the Second World War.[17]

On the run from Hoboken to Scranton the west bound trains would stop at Gravel Place just outside East Stroudsburg where they would obtain coal and water and have pusher locomotives attached to the rear for the run to Pocono Summit. Having reached that

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16. *Ibid.*, 210, 234, 238.

17. Interview of John McCrone by Berle Clemensen, May 24, 1989; Interview of Wendell Taft by Berle Clemensen, May 24, 1989; Interview of George Karabin by Berle Clemensen, May 19, 1989.

station the pusher engines would return to Gravel Place while the train locomotive resupplied with water for the run to Scranton.[18]

Scranton served as the main locomotive repair center, but, besides minor car repair capabilities, Gravel Place had some facilities for locomotive repair. An engine stopping at Gravel Place for a layover (as at Scranton) would be inspected. In addition the engineer could hand the inspector a slip of paper on which he had listed operating problems. The locomotive would be taken to the turntable (which rotated at two miles per hour) and aligned with a vacant stall in the small, seven-stall roundhouse. A pit under the stall track permitted a mechanic to inspect the undercarriage. After minor repairs were made, the hostler took charge. He would fill the water tank, load the tender with coal, remove the ashes, and return the locomotive to the roundhouse where he banked the fire until the time neared for the engine's use.[19]

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18. Interview of George Karabin by Berle Clemensen, May 19, 1989; Tabor, *The Delaware, Lackawanna and Western Railroad*, Part I, 228; *The Pocono Record* (The Stroudsburgs, Pennsylvania), June 5, 1970.

19. *The Pocono Record* (The Stroudsburgs, Pennsylvania), June 5, 1970.

CHAPTER 5

EVALUATION OF THE DELAWARE, LACKAWANNA AND WESTERN RAILROAD ROUTE FROM SCRANTON TO SLATEFORD JUNCTION

The Delaware, Lackawanna and Western Railroad right-of-way from Scranton to Slateford Junction for the most part follows the historic right-of-way acquired in 1850 from the unconstructed Delaware and Cobb's Gap Railroad. It, however, reflects twentieth century modernization between the dates 1899 to 1939. It was in this latter era that the road was raised and widened. Approximately eight miles of the line sustained alignment changes in the twentieth century to eliminate curves. These areas include mile 114.78 to 118.78 and mile 119.38 to 119.83 which were constructed in 1908. The route between mile 90.00 and 91.00, 87.20 and 87.50, and 85.90 and 86.81 was changed in 1911. Approximately one mile in the mile 100.00 area was altered in 1936, while a new route was developed around the old Paradise Tunnel section between mile 98.70 and 99.05 in 1942. As a result, the entire right-of-way except that changed in 1942 can be considered as having historical integrity and will be nominated to the National Register of Historic Places with the period of significance dating from 1899 to 1939. Currently, the line between Scranton and Moscow is owned by the city of Scranton including the Moscow passenger station and freight depot. The remainder of the route has been retained by Conrail except for the East Stroudsburg passenger station which is in the possession of Doug and Pat Incorporated of East Stroudsburg and the Delaware Water Gap passenger station and freight depot owned by the Delaware Water Gap borough. Along the entire route, only the East Stroudsburg passenger station has been included in the National Register of Historic Places.

Rails and crossties within the right-of-way reflect twentieth century development, although only a single track remains for most of the approximately fifty-nine-mile distance from Scranton to Slateford Junction. The thirteen miles between Scranton and Moscow have a double track as well as the seven miles between Slateford Junction and East Stroudsburg. A two-mile section in the East Stroudsburg area has four tracks. Historically, through the first half of the twentieth century, the line contained three tracks over most of its distance with approximately ten miles having four tracks and another eight miles with two tracks. Rails that remain retain the thirty-nine feet length adopted in the mid-1920s and the 131 pounds per yard weight prescribed in 1934. Few rails, however, remain from the 1930s. Crossties for the most part date from 1947 or later. As a result, rails and crossties will be considered to be too new to fall within the period of significance.

The right-of-way also contains passenger stations, freight depots, interlocking towers, block signal bridges, numerous culverts and bridges, and drainage pipes ranging in diameter from eight to thirty-six inches. Most of these buildings and structures fall within the period of significance.

All of these buildings and structures were tied to railroad operations. The stations and depots were involved with passenger and freight functions. Interlocking towers and block signal bridges promoted safety and effective train movements through the control of switches and signals. Culverts and bridges allowed the roadbed to cross rivers, streams, and other bodies of water. Finally, the cast iron pipes promoted roadbed drainage. A list of these buildings and structures follows. Their locations are identified by mile number on the accompanying maps.

Contributing (Buildings)

Mile	Description	Material	Date
74.19	Two-story interlocking tower	Concrete with hip roof and asphalt shingles	1911

Interlocking towers housed a series of levers which connected to switches by cables. The levers could only be operated in proper sequence so as to prevent two trains from occupying the same track or siding at the same time. This method of switching was also used to establish the particular route set for a train to take.

77.17	Delaware Water Gap Passenger Station	One and a half-story brick with a hip roof covered with slate shingles	1903

This one-and-a-half-story, brick Victorian railroad vernacular station is owned by the Delaware Water Gap borough. It has a low-pitched gable roof canopy supported by heavy, ornamental brackets around the building. it has a gable roof sheltered platform on the north end which also has slate shingles. The building is in an advanced state of decay.

77.17	Delaware Water Gap Freight Depot	One-story brick with a hip roof covered with slate shingles	1903

This one-story, red brick, Victorian railroad vernacular depot is owned by the Delaware Water Gap borough. The overhanging hip roof is covered with slate shingles. Heavy decorative brackets support the overhang. Like the adjacent passenger station, it is in an advanced state of decay.

81.56	East Stroudsburg Passenger Station	One and a half story wood frame with gable roof covered with asphalt shingles	1883 and 1915

This one and a half story, wood frame Victorian railroad vernacular passenger station was placed on the National Register of Historic Places on June 27, 1980. The gable roof contains symmetrical dormers. Exterior walls have a vertical board wainscoting on the lower part with clapboard siding on the upper portion. A low-pitched gable roof canopy extends around the building and is supported by ornamental brackets of a curve and circle design. The building retains its 1883 appearance. Cosmetic alterations, such as colored glass windows in the waiting room, occurred in 1915. A gable roof shelter platform on the north contains the same design elements as the gable roof canopy on the station. Owned by Doug and Pat Incorporated of East Stroudsburg, it currently serves as a restaurant.

Mile	Description	Material	Date
81.65	Two-story interlocking tower	Wood frame with hip roof and wood shingles	1908

This interlocking tower served the same function as the concrete one previously described. It is the only surviving wood frame tower along the route. The first floor exterior is covered with clapboard siding while the upper floor contains fish scale siding below the windows. The second floor overhangs the first story on the track side. This overhang is supported by simple brackets.

83.12	Two-story interlocking tower	Concrete with hip roof and asphalt shingles	1911

This concrete building is identical to the concrete interlocking tower previously described.

85.14	Two-story interlocking tower	Concrete with hip roof and asphalt shingles	1902

This concrete building is identical to the concrete interlocking tower previously described.

94.58	Cresco Passenger Station	One-story wood frame with a gable roof covered with asphalt shingles	1888

This one-story, wood frame Victorian railroad vernacular station has exterior vertical board wainscoting on the lower part with tongue-in-groove siding on the upper portion. The gable roof has finials at each end and Victorian gable decoration. The roof overhang contains curved brackets. It has been renovated and leased for a storehouse.

102.52	Pocono Summit Passenger Station	Concrete with hip roof covered with asphalt shingles	1911

This unusual passenger station was constructed with concrete walls. A shelter platform extends on the south end and is covered by an extension of the hip roof. It is supported by square and round concrete pillars. The station was renovated in 1987.

Mile	Description	Material	Date
103.16	Two-story interlocking tower	Concrete with hip roof roof and asphalt shingles	1910

This concrete building is identical to the concrete interlocking tower previously described.

107.60	Two-story interlocking tower	Concrete with hip roof and asphalt shingles	1910

This concrete building is identical to the concrete interlocking tower previously described.

107.62	Tobyhanna Station	One-story wood frame with a gable on hip roof covered with asphalt shingles	1908

This one-story, wood frame Victorian railroad vernacular station has exterior vertical wainscoting on the lower part, clapboard siding in the middle wall section, and vertical boards with scallop nosing on the upper portion. Curved brackets support the overhang of the gable on hip roof.

112.19	Two-story interlocking tower	Concrete with hip roof and asphalt shingles	1912

This concrete building is identical to the concrete interlocking tower previously described.

112.89	Gouldsboro Station	One-story wood frame with a gable on hip roof covered with asphalt shingles	1907

The Gouldsboro station has an identical plan to the Tobyhanna station except that it has a gable on hip roof shelter platform extension on its south end.

120.54	Moscow Passenger Station	One-story brick with a hip roof covered with asphalt shingles	1904

This one-story, red brick Victorian railroad vernacular passenger station has a hip roof covered with asphalt shingles. The hip roof extends over a shelter platform on the south end. Square brick columns support the shelter platform roof. Curved brackets support the hip roof overhang. The city of Scranton renovated the building in 1988.

120.55	Moscow Freight Depot	One-story wood frame with a hip roof covered with asphalt shingles	1904

This one-story, wood frame Victorian railroad vernacular freight depot has a hip roof covered with asphalt shingles. The exterior walls have vertical wainscoting on the lower part, clapboard siding in the middle section, and vertical boards with scallop nosing on the upper portion. Curved brackets support the overhang of the gable roof. A wood platform surrounds the building.

Contributing (Structures)

The following cast iron pipes were placed across the roadbed to facilitate drainage and promote a solid, stable line. As a result, they form an integral part of the right-of-way. Bridges and culverts were necessary to span waterways. Block signal bridges contained the train movement signals.

Mile	Description	Material	Date
74.25	24-inch pipe	cast iron	ca. 1910
74.32	12-inch pipe	cast iron	ca. 1910
74.36	20-inch pipe	cast iron	ca. 1910
74.43	20-inch pipe	cast iron	ca. 1910
74.58	12-inch pipe	cast iron	ca. 1910
74.59	16-inch pipe	cast iron	ca. 1910
74.62	16-inch pipe	cast iron	ca. 1910
74.77	20-inch pipe	cast iron	ca. 1910
74.89	Box culvert (3-foot span)	concrete	ca. 1910
74.95	10-inch pipe	cast iron	ca. 1910
75.02	10-inch pipe	cast iron	ca. 1910
75.10	16-inch pipe	cast iron	ca. 1910
75.14	20-inch pipe	cast iron	ca. 1910
75.20	Box culvert (3-foot span)	concrete	ca. 1910
75.25	20-inch pipe	cast iron	ca. 1910
75.40	10-inch pipe	cast iron	ca. 1910
75.52	16-inch pipe	cast iron	ca. 1910
76.03	32-inch pipe	cast iron	ca. 1910
76.10	16-inch pipe	cast iron	ca. 1910
76.12	10-inch pipe	cast iron	ca. 1910
76.29	10-inch pipe	cast iron	ca. 1910
76.35	Bridge (28-1/2-foot span)	concrete slab	1907
76.42	18-inch pipe	cast iron	ca. 1910
76.52	Rail top culvert (3-foot span)	concrete and steel	ca. 1905
76.53	16-inch pipe	cast iron	ca. 1910
76.61	16-inch pipe	cast iron	ca. 1910
76.62	16-inch pipe	cast iron	ca. 1910
76.72	16-inch pipe	cast iron	ca. 1910
76.85	Two, 16-inch pipes	cast iron	ca. 1910
76.90	Box culvert (3-foot span)	concrete	ca. 1910
77.00	36-inch pipe	cast iron	ca. 1910
77.23	24-inch pipe	cast iron	ca. 1910
77.24	12-inch pipe	cast iron	ca. 1910
77.30	10-inch pipe	cast iron	ca. 1910
77.50	Bridge 86 (34-1/2-foot span)	deck plate girder and concrete	1914
77.90	Box culvert (3-foot span)	concrete	ca. 1910
78.20	Box culvert (3-foot span)	concrete	ca. 1910
79.35	24-inch pipe	cast iron	ca. 1910
79.37	Rail top culvert (6-foot span)	concrete and steel	1902
79.52	18-inch pipe	cast iron	ca. 1910
79.53	18-inch pipe	cast iron	ca. 1910
79.54	18-inch pipe	cast iron	ca. 1910
79.62	18-inch pipe	cast iron	ca. 1910
79.78	18-inch pipe	cast iron	ca. 1910
79.88	18-inch pipe	cast iron	ca. 1910

Mile	Description	Material	Date
79.92	12-inch pipe	cast iron	ca. 1910
80.25	18-inch pipe	cast iron	ca. 1910
80.32	Two, 18-inch pipes	cast iron	ca. 1910
80.41	18-inch pipe	cast iron	ca. 1910
80.53	12-inch pipe	cast iron	ca. 1910
81.22	24-inch pipe	cast iron	ca. 1910
81.29	Through riveted truss bridge (120-foot span)	concrete and steel	1932
81.38	Arched culvert (8-foot span)	concrete	ca. 1912
81.50	Santa Fe type water tower	steel	ca. 1914
81.74	Bridge (3-foot span)	concrete slab	1925
81.76	Block signal bridge	steel frame	1912
82.13	Bridge (5-foot span)	concrete slab	ca. 1912
82.45	Block signal bridge	steel frame	1912
82.57	Box culvert (3-1/2-foot span)	concrete	ca. 1910
82.83	Arched culvert (18-foot span)	concrete	1903
83.04	Block signal bridge	steel frame	1912
83.24	Block signal bridge	steel frame	1912
83.73	Block signal bridge	steel frame	1912
84.14	Box culvert (3-foot span)	concrete	ca. 1910
84.46	Rail top culvert	concrete and steel	1907
85.17	Block signal bridge	steel frame	1912
85.19	Box culvert (6-foot span)	concrete	ca. 1910
85.71	Double box culvert (5-3/4-foot span)	concrete	ca. 1910
85.78	Block signal bridge	steel frame	1912
85.81	Four, 20-inch pipes	cast iron	ca. 1910
86.06	Bridge 82 – Deck plate girder (103-1/2-foot span)	concrete and steel	1913
86.29	Bridge 80 (59-foot span)	concrete slab	1910
86.68	24-inch pipe	cast iron	ca. 1910
87.42	Bridge 79 (89-foot span)	two concrete arches	1911
87.61	Block signal bridge	steel frame	1912
87.79	16-inch pipe	cast iron	ca. 1911
88.37	Block signal bridge	steel frame	1912
88.59	Box culvert (3-1/2-foot span)	concrete	ca. 1911
89.06	24-inch pipe	cast iron	ca. 1911
89.24	20-inch pipe	cast iron	ca. 1911
89.29	Box culvert (5-foot span)	concrete	ca. 1911
89.35	20-inch pipe	cast iron	ca. 1911
89.37	Block signal bridge	steel frame	1912
89.50	20-inch pipe	cast iron	ca. 1911
89.81	box culvert (3-foot span)	concrete	ca. 1911
90.08	24-inch pipe	cast iron	ca. 1911
90.16	24-inch pipe	cast iron	ca. 1911
90.95	Box culvert (5-foot span)	concrete	ca. 1911
91.00	Block signal bridge	steel frame	1912
91.32	10-inch pipe	cast iron	ca. 1911
91.48	8-inch pipe	cast iron	ca. 1911
91.63	10-inch pipe	cast iron	ca. 1911
91.85	10-inch pipe	cast iron	ca. 1911
92.00	10-inch pipe	cast iron	ca. 1911
92.13	Arched culvert (5-foot span)	concrete	ca. 1905
92.35	20-inch pipe	cast iron	ca. 1905
92.48	10-inch pipe	cast iron	ca. 1905
92.58	Box culvert (2-foot span)	stone	ca. 1865
92.63	10-inch pipe	cast iron	ca. 1905
92.84	Box culvert (4-foot span)	stone	ca. 1865

Mile	Description	Material	Date
92.99	10-inch pipe	cast iron	ca. 1905
93.05	10-inch pipe	cast iron	ca. 1905
93.10	10-inch pipe	cast iron	ca. 1905
93.26	10-inch pipe	cast iron	ca. 1905
93.35	Box culvert with 20-inch pipe extension (6-foot span)	stone and cast iron	ca. 1865 and 1905
93.45	Box culvert (3-foot span)	stone	ca. 1865
93.71	24-inch pipe	cast iron	ca. 1905
93.92	10-inch pipe	cast iron	ca. 1905
94.35	Box culvert (5-foot span)	stone	ca. 1865
94.53	Two, 24-inch pipes	cast iron	ca. 1905
94.72	16-inch pipe	cast iron	ca. 1905
94.72	20-inch pipe	cast iron	ca. 1905
95.05	Arched culvert (6-foot span)	concrete	ca. 1905
96.28	18-inch pipe	cast iron	ca. 1905
96.65	Box culvert (2-foot span)	concrete	ca. 1905
97.26	Arched culvert (17-foot span)	stone	1870
97.84	10-inch pipe	cast iron	ca. 1905
97.96	18-inch pipe	cast iron	ca. 1905
97.97	16-inch pipe	cast iron	ca. 1905
98.09	Three, 16-inch pipes	cast iron	ca. 1905
98.40	Box culvert (4-foot span)	stone	ca. 1865
100.26	Through plate girder bridge (77-1/2-foot span)	concrete and steel	1936
100.65	Pipe culvert	concrete	1912
100.91	Box culvert (2-1/2-foot span)	stone	ca. 1865
101.01	Two, 16-inch pipes	cast iron	ca. 1905
101.51	Two, 24-inch pipes	cast iron	ca. 1905
101.82	Two, 16-inch pipes	cast iron	ca. 1905
101.90	Block signal bridge	steel frame	1910
102.90	Bridge 70 (17-foot span)	concrete and steel I beam	1928
103.19	Two, 20-inch pipes	cast iron	ca. 1905
103.60	Block signal bridge	steel frame	1910
104.34	Arched culvert (13-2/3-foot span)	concrete	1905
104.45	Block signal bridge	steel frame	1910
104.81	Three, 18-inch pipes	cast iron	ca. 1905
105.29	Block signal bridge	steel frame	1910
105.62	Two, 16-inch pipes	cast iron	ca. 1905
106.09	Block signal bridge	steel frame	1910
106.66	16-inch pipe	cast iron	ca. 1905
106.97	Block signal bridge	steel frame	1910
107.05	Bridge (24-foot span)	concrete slab	1917
107.39	Bridge 75 (47-foot span)	concrete arch	1909
107.44	Bridge 74 (18-foot span)	concrete and steel I beam	1908
108.89	Block signal bridge	steel frame	1910
109.45	15-inch pipe	cast iron	ca. 1905
110.29	24-inch pipe	cast iron	ca. 1905
110.43	Box culvert (3-foot span)	concrete	ca. 1905
110.61	Box culvert (2-1/2-foot span)	concrete	ca. 1905
110.78	Block signal bridge	steel frame	1910
112.17	Arched culvert (6-foot span)	concrete	1912
112.79	Two, 18-inch pipes	cast iron	ca. 1910
113.50	Bridge 72 – Deck plate girder (26-3/4-foot span)	concrete and steel	1907
114.13	Box culvert (2-1/2-foot span)	stone with concrete extension	ca. 1907
115.36	Rail top culvert (5-foot span)	concrete and steel	ca. 1907
115.75	24-inch pipe	cast iron	ca. 1907
116.21	24-inch pipe	cast iron	ca. 1907

Mile	Description	Material	Date
116.76	24-inch pipe	cast iron	ca. 1907
116.76	Bock signal bridge	steel frame	ca. 1907
117.76	Bridge 71 (16-foot span)	concrete	1908
117.80	Deck plate girder bridge (29.2-foot span)	concrete and steel	1908
118.07	36-inch pipe	concrete	ca. 1908
118.54	Arched culvert (16-foot span)	concrete	1908
118.67	Block signal bridge	steel frame	1910
118.93	Deck plate girder bridge	concrete and steel	1908
119.37	24-inch pipe	cast iron	ca. 1908
119.59	Arched culvert (13-foot span)	concrete	1908
119.77	16-inch pipe	cast iron	ca. 1908
119.85	Box culvert (2-foot span)	concrete	ca. 1908
119.95	Two, 20-inch pipes	cast iron	ca. 1908
120.42	Arched culvert (16-foot span)	concrete	1914
120.47	Concrete slab bridge (48-foot span)	concrete	1911
120.67	Block signal bridge	steel frame	1910
120.85	Two, 16-inch pipes	cast iron	ca. 1908
121.09	16-inch pipe	cast iron	ca. 1908
121.30	16-inch pipe	cast iron	ca. 1908
121.36	16-inch pipe	cast iron	ca. 1908
121.42	16-inch pipe	cast iron	ca. 1908
121.54	Box culvert (4-foot span)	concrete	1907
121.74	20-inch pipe	cast iron	ca. 1908
121.92	16-inch pipe	cast iron	ca. 1908
122.22	Block signal bridge	steel frame	1910
122.24	30-inch pipe	cast iron	ca. 1908
122.37	Box culvert (1-foot span)	concrete	ca. 1907
122.91	Rail top culvert (4-foot span)	concrete and steel	ca. 1907
123.25	30-inch pipe	cast iron	ca. 1908
123.49	16-inch pipe	cast iron	ca. 1908
123.55	Rail top culvert (5-foot span)	concrete and steel	1901
123.70	24-inch pipe	cast iron	ca. 1904
123.72	12-inch pipe	cast iron	ca. 1904
123.80	24-inch pipe	cast iron	ca. 1904
123.98	Rail top culvert (6-foot span)	concrete and steel	1904
124.12	Block signal bridge	steel frame	1910
124.27	Box culvert (3-foot span)	concrete	ca. 1904
124.76	18-inch pipe	cast iron	ca. 1904
124.98	Block signal bridge	steel frame	1910
125.06	Box culvert (3-foot span)	concrete	ca. 1910
125.27	Box culvert (3-foot span)	concrete	1907
125.79	Block signal bridge	steel fame	1910
126.13	16-inch pipe	cast iron	ca. 1904
127.03	Arched culvert (20-foot span)	concrete	1903
127.34	16-inch pipe	cast iron	ca. 1904
127.41	16-inch pipe	cast iron	ca. 1904
127.51	Two, 16-inch pipes	cast iron	ca. 1904
127.65	16-inch pipe	cast iron	ca. 1904
127.76	Two, 16-inch pipes	cast iron	ca. 1904
127.81	Bock signal bridge	steel frame	1910
128.18	Two, 16-inch pipes	cast iron	ca. 1904
128.55	16-inch pipe	cast iron	ca. 1904
128.63	Block signal bridge	steel frame	1910
129.19	20-inch pipe	cast iron	ca. 1904
129.19	16-inch pipe	cast iron	ca. 1904

Mile	Description	Material	Date
129.51	Concrete slab bridge (7-foot span)	concrete	1901
129.63	Block signal bridge	steel frame	1910
129.66	Box culvert (3-1/4-foot span)	concrete	1905
129.84	Box culvert (3-1/4-foot span)	concrete	1905
130.22	Bridge 68 – Deck plate girder (59-1/2-foot span)	concrete and steel	1925
130.38	Rail top culvert (8-foot span)	concrete and steel	1924
130.54	Five, 20-inch pipes	cast iron	ca. 1904
130.66	16-inch pipe	cast iron	ca. 1904
130.73	Arched culvert (26-foot span)	concrete	1906
130.87	Bridge 64 – Deck plate girder (59-1/2-foot span)	concrete and steel	1925
131.12	Concrete slab bridge (41-foot span)	concrete	1912
131.28	18-inch pipe	cast iron	ca. 1904
131.28	Two, 16-inch pipes	cast iron	ca. 1904
131.40	Block signal bridge	steel frame	1910
131.51	24-inch pipe	cast iron	ca. 1904
131.51	10-inch pipe	cast iron	ca. 1904
131.53	10-inch pipe	cast iron	ca. 1904
131.58	24-inch pipe	cast iron	ca. 1904
131.64	15-inch pipe	cast iron	ca. 1904
131.76	Nay Aug Tunnels	two tunnels	1856 and 1906
132.06	20-inch pipe	cast iron	ca. 1908
132.16	Block signal bridge	steel frame	1910
132.34	12-inch pipe	cast iron	ca. 1908
132.40	24-inch pipe	cast iron	ca. 1908
132.51	30-inch pipe	cast iron	ca. 1908
132.62	36-inch pipe	cast iron	ca. 1908
132.90	Block signal bridge	steel frame	1910
133.27	Two deck plate girder bridges Bridge 62	concrete and steel	1907

Noncontributing

These buildings and structures fall outside of the period of significance.

74.63	Signal shack	concrete	ca. 1965
78.66	Bridge 85 – Through plate girder	concrete and steel	1955
84.60	Signal shack	concrete	ca. 1965
97.92	Two, 6-foot pipes	steel	1955
108.37	Bridge 73 – Deck plate girder	concrete and steel	1963
108.56	Signal shack	concrete	ca. 1965
131.80	Deck plate girder bridge	concrete and steel	1955
133.09	Deck plate girder bridge	concrete and steel	1970

APPENDIX

Some observations on potential interpretive locations that might interest excursion train riders are offered. As one leaves the Scranton yard by train there are many sites and remains along the route to Slateford Junction which could be interpreted. These include:

The 1908 Passenger Station now the Royce Hotel at Lackawanna Station.

The site of the Lackawanna and Wyoming Valley electric railroad (Laurel Line) passenger station on the right near Mattes Street as well as the area of the Laurel Line tracks which paralleled the DL&W tracks until mile 132.45 when they curved right across Roaring Brook and entered the Crown Avenue tunnel. The old Laurel Line car repair shop remains at mile 132.62. It currently houses a plastics factory.

The bridge which one crosses at mile 131.80, just before entering Nay Aug tunnel, was destroyed in 1955 with the flooding which followed in the aftermath of Hurricane Dianne.

At mile 131.79 one enters the left Nay Aug tunnel which was constructed in 1856. The other tunnel, no longer in use, was built in 1906 as part of a modernization and expansion project.

As one approaches mile 130.90 the Dunmore branch tracks of the Laurel Line (no longer remaining) began to parallel the DL&W tracks. At mile 130.77 the Erie Railroad once passed over the Laurel Line and DL&W tracks. One can still see the stone bridge abutments.

A large, orange building appears at mile 130.60. It was built in 1901, at the time the Erie Railroad purchased the old Erie and Wyoming Valley Railroad, for use as a locomotive and later a car repair shop in the Erie's Scranton yard. After the Erie merged with the DL&W in 1960 the shop was closed. Subsequently, DeNaples Auto Parts bought the building to store used car parts. The DeNaples junk yard can be observed on the right a short distance up the line.

At mile 129.31 one encounters Reservoir No. 7. It forms part of the Scranton water supply system. As early as 1854 George and Seldon Scranton began to develop a water supply system for their borough. In that year they chartered the Scranton Gas and Water Company and began to develop water supply reservoirs in the hills around Scranton. When the Erie and Wyoming Valley Railroad acquired the Pennsylvania Coal Company gravity railroad in 1884, it abandoned the gravity line for steam power. The Scranton Gas and Water Company acquired the site of the old gravity inclined plane No. 7 along Roaring Brook and constructed a dam across the stream. Thus the reservoir came to be called No. 7 after the site of the inclined plane No. 7. Subsequently, the Scranton family sold its water works in 1926 to the Scranton-Spring Brook Water Service Company. The name ultimately was changed to Pennsylvania Gas and Water Company in 1960.

In the area of reservoir No. 7, the no longer extant DL&W Winton Branch began to parallel the main line on the left. At the same location the site of the old Erie Railroad line also began to parallel the DL&W main line next to the Winton Branch. It followed the route of the old Pennsylvania Coal Company light gravity railroad. The Erie crossed over the DL&W at mile 128.88 to run for a time on the opposite side of Roaring Brook. That bridge no longer exists.

The old Drinker Turnpike, the first road to enter the region in the 1820s, began to parallel the DL&W Winton Branch on the left at mile 128.73. By mile 127.76, near Nay Aug, it forked.

At mile 127.73 the Nay Aug yard began. It was here that the DL&W Winton Branch terminated. Anthracite coal hauled over that branch line came to the 130-car Nay Aug yard for classification. Most of the loaded coal cars from that line were attached to New Jersey bound coal trains here. By the late 1930s the Nay Aug yard had lost its importance as coal production along the Winton Branch decreased. The interlocking tower was closed and freight trains no longer stopped at Nay Aug.

Upon leaving the Nay Aug yard the line begins its climb through Cobb's Gap to Elmhurst. Cobb's Gap formed part of the name of the old unconstructed Delaware and Cobb's Gap railroad. It was that line which established the right-of-way in the 1830s between Scranton and the Delaware River only to sell it to George and Seldon Scranton in 1850 for the projected southern division of their railroad.

About one mile before entering Elmhurst, at mile 124.66, most slow freight trains stopped to take on water at Thoop's Tank. This water station was removed in the 1950s since the diesel era did not require periodic stops for water.

Men such as B.H. Throop, after whom Throop's Tank was named, operated sawmills and conducted timber cutting operations along the entire route until the mountains were denuded of trees by the mid-1880s. As a result, one hundred years ago most vegetation along the railroad line comprised only scrubby growth. This ecological disaster took its toll on wild life and the water supply.

At mile 123.21 the tracks begin to pass by the Elmhurst Reservoir. Constructed in 1890, it forms part of the Scranton water supply system. By the latter part of the nineteenth century the population growth of Scranton required greater water reserves. At the same time, the denuded woods allowed rapid moisture runoff and thus the groundwater was not replenished. As a result, the Scranton family began to extend its reservoir construction farther from the city to contain needed water. The dam and spillway cover the site of nineteenth century Elmhurst industry such as a shingle factory, chair factory, and a tannery.

Although settlement began in Elmhurst by the late 1840s, the depleted woods brought an end to its industrial base by the 1880s. At that time much of the acreage was purchased to establish a residential community. Whether N.G. Schoonmaker, the developer, foresaw urban flight from an overcrowded Scranton or not, Elmhurst like Moscow, Gouldsboro, and Tobyhanna, did develop more into residential bedroom communities by 1900 for men who worked in Scranton. This event occasioned the establishment of the DL&W's "accommodation" train to transport commuters from these boroughs to work in Scranton.

Approximately three-fourths mile after passing the Moscow station, the DL&W track enters an area which for over five miles sustained right-of-way changes in the 1908 period to streamline the line and remove a number of curves.

Located approximately at mile 114.75, the area once contained the Lehigh wye where most pusher and helper locomotives from Scranton dropped off and returned to Scranton.

As the track approaches Gouldsboro, it passes between two lakes at approximately mile 113.50. Just after the turn of the century the Scranton family extended the Scranton Gas and Water Company's water sources to include these lakes. The lakes also served as a source of ice for the ice business which developed in this region in the late 1880s. Between these lakes and those at approximately mile 103.00 just north of Pocono Summit, the heart of the ice harvest business was located. Large ice storage buildings dotted the line by each body of water. By the early 1960s all of these structures had been removed.

Just south of the Gouldsboro station at mile 112.69, the Gouldsboro railroad yard began. Although the tracks have been removed, this small yard served as a set off location for "crippled" car repair. Here a small force of men performed minor repair work which mostly involved wheel problems such as malfunctioning bearings that caused "hot boxes." Gouldsboro, originally known as Sand Cut, was named after Jay Gould, a railroad magnate, who early in his career operated a tannery in the area.

At mile 108.37 the DL&W track crosses an entrance to Tobyhanna Depot. Begun as a training camp in 1913, it served several military functions until it was finally controlled by the United States Army Signal Corps as a depot for communication equipment.

The site of the Pocono Summit wye, at mile 103.40, was the location where the all important pusher and helper steam locomotives from Gravel Place turned around and returned to Gravel Place. It was this engine force which allowed the DL&W to boost its heavier trains over the Pocono Mountains.

The area from Pocono Summit to Cresco gave rise to the largest number of Pocono Mountain resorts which provided vacationers with a large variety of summer and ultimately winter recreation activities.

As a train passed Pocono Summit it began the descent through the Pocono Mountains toward the Delaware Water Gap. Several small towns along the route such as Henryville and Analomink had their origins in the nineteenth century lumber and tanning business. They ultimately became minor recreation areas.

Reaching mile 83.05 the tracks entered Gravel Place. About one mile in length and 400 feet wide Gravel Place contained several facilities. Basically, it served as a pusher station to assist trains up the Pocono Mountains. It had a servicing area where mainline locomotives obtained fuel and water and had ashes removed. A "cripple" track permitted cars needing minor repairs to be attended. As at Gouldsboro, repairs mainly involved correcting wheel problems. Livestock pens were located at the northwest end of the yard. These pens served as a rest stop for livestock that had traveled twenty-four hours. Until 1929 an area along the west side of the tracks was used for soft coal storage. It held 15,000 cars of coal which were kept stockpiled in case of a miners' strike. With the advent of the diesel era, Gravel Place became obsolete. It was closed at the end of the 1940s. Today it is the site of a General Electric plant.

At mile post 81.65 in East Stroudsburg a two-story wood frame interlocking tower can be viewed. Unlike the concrete interlocking towers along the route, this building still contains part of the original switching levers connected to the pipe which operated switches.

Between East Stroudsburg and Slateford Junction the first white settlements along the DL&W route occurred. The first vacation hotels attracting individuals to the Delaware Water Gap area were erected in that territory.

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*U.S. GOVERNMENT PRINTING OFFICE 1991-0-573-040/20078

Location

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

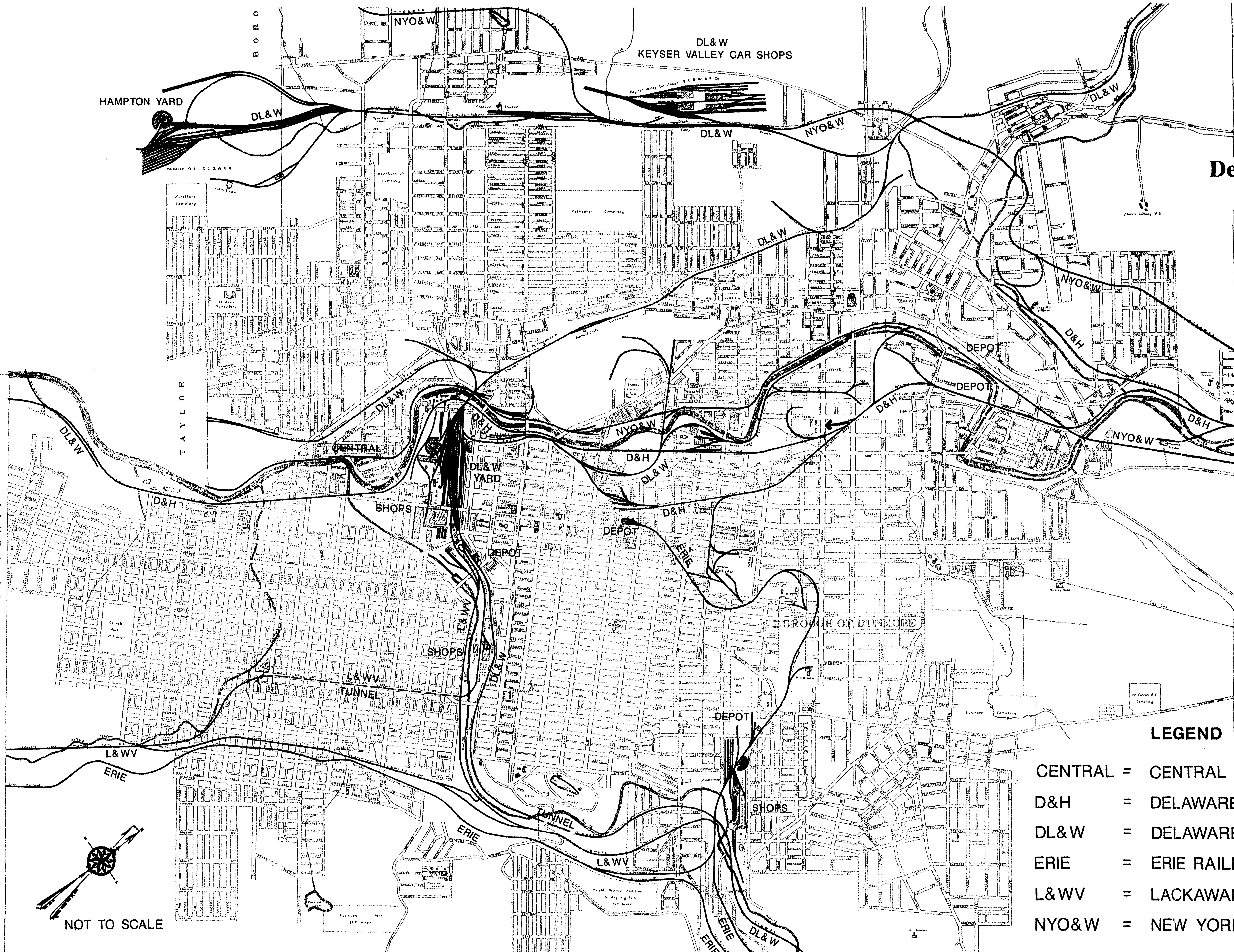
United States Department of the Interior
National Park Service
DSC/APR'90/903/20021

1930
Railroads in the City of Scranton
And Part of
Borough of Dunmore

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

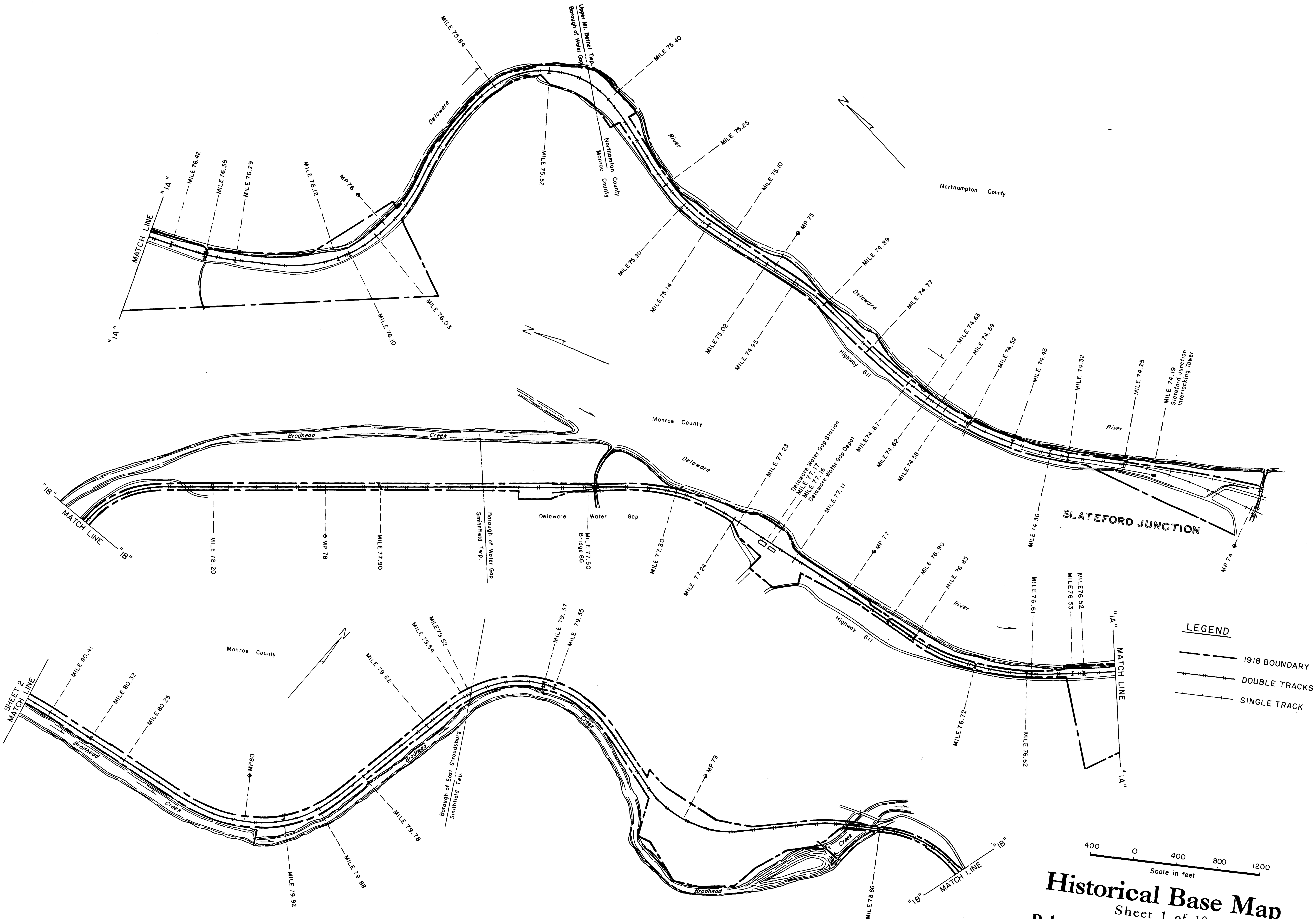
United States Department of the Interior
National Park Service
DSC/APR'90/903/20020



LEGEND

CENTRAL	=	CENTRAL RAILROAD OF NEW JERSEY
D&H	=	DELAWARE AND HUDSON RAILROAD
DL&W	=	DELAWARE, LACKAWANNA AND WESTERN RAILROAD
ERIE	=	ERIE RAILROAD
L&WV	=	LACKAWANNA AND WYOMING VALLEY RAILROAD
NYO&W	=	NEW YORK, ONTARIO AND WESTERN RAILROAD

ON MICROFILM

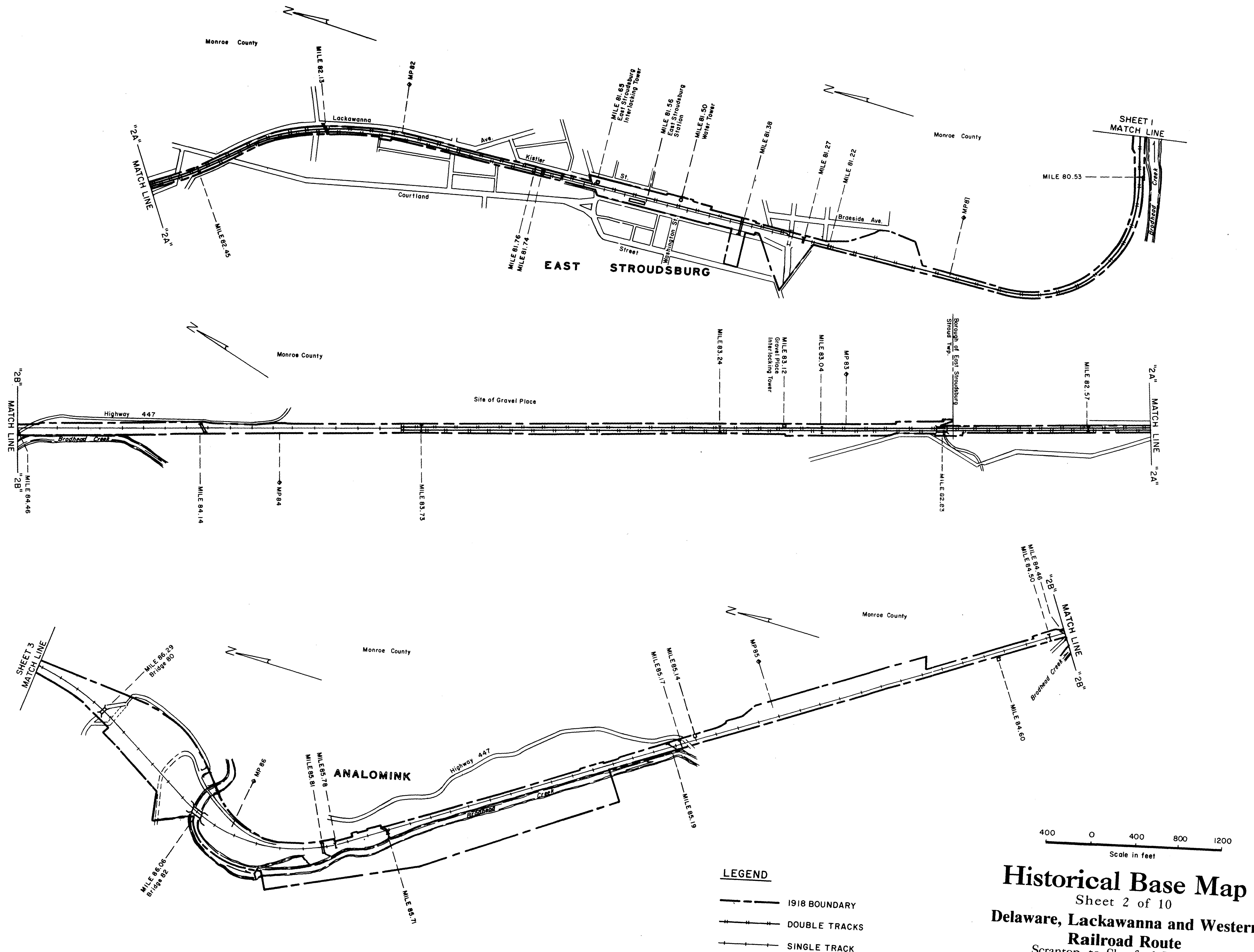


Historical Base Map

Sheet 1 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford



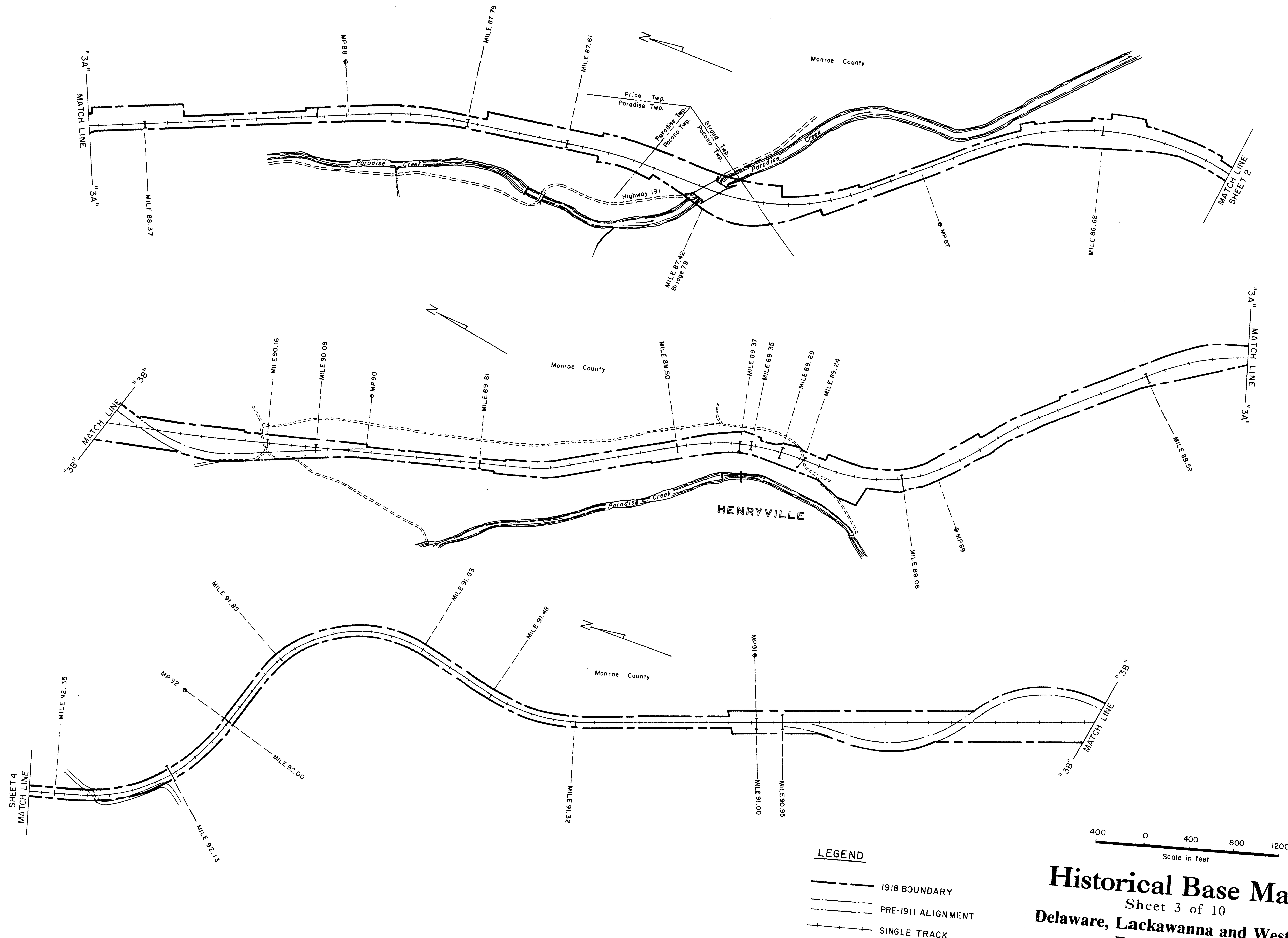
Historical Base Map

Sheet 2 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service



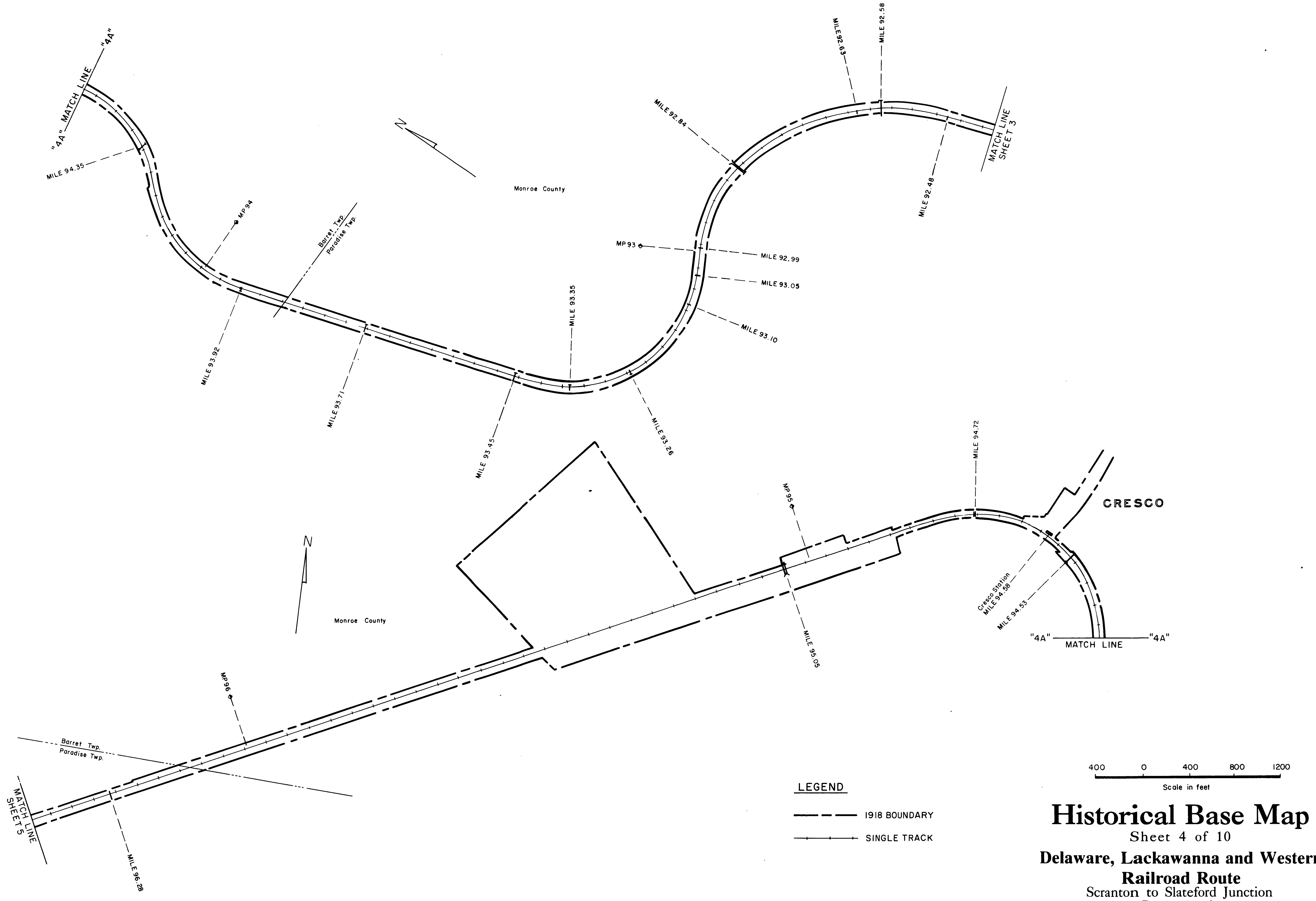
Historical Base Map

Sheet 3 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States



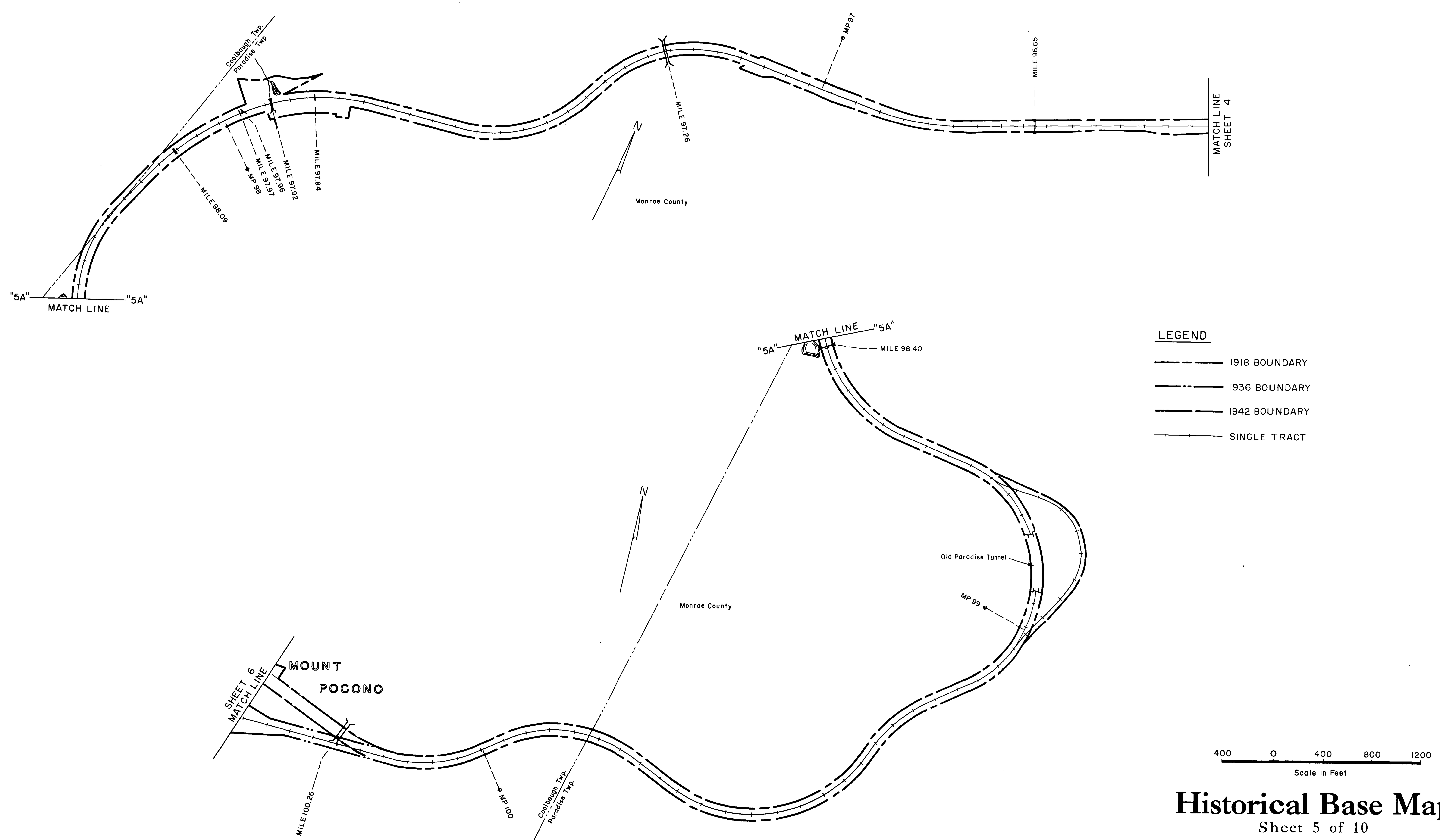
Historical Base Map

Sheet 4 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service
DSC/APR'90/903/20019



Historical Base Map

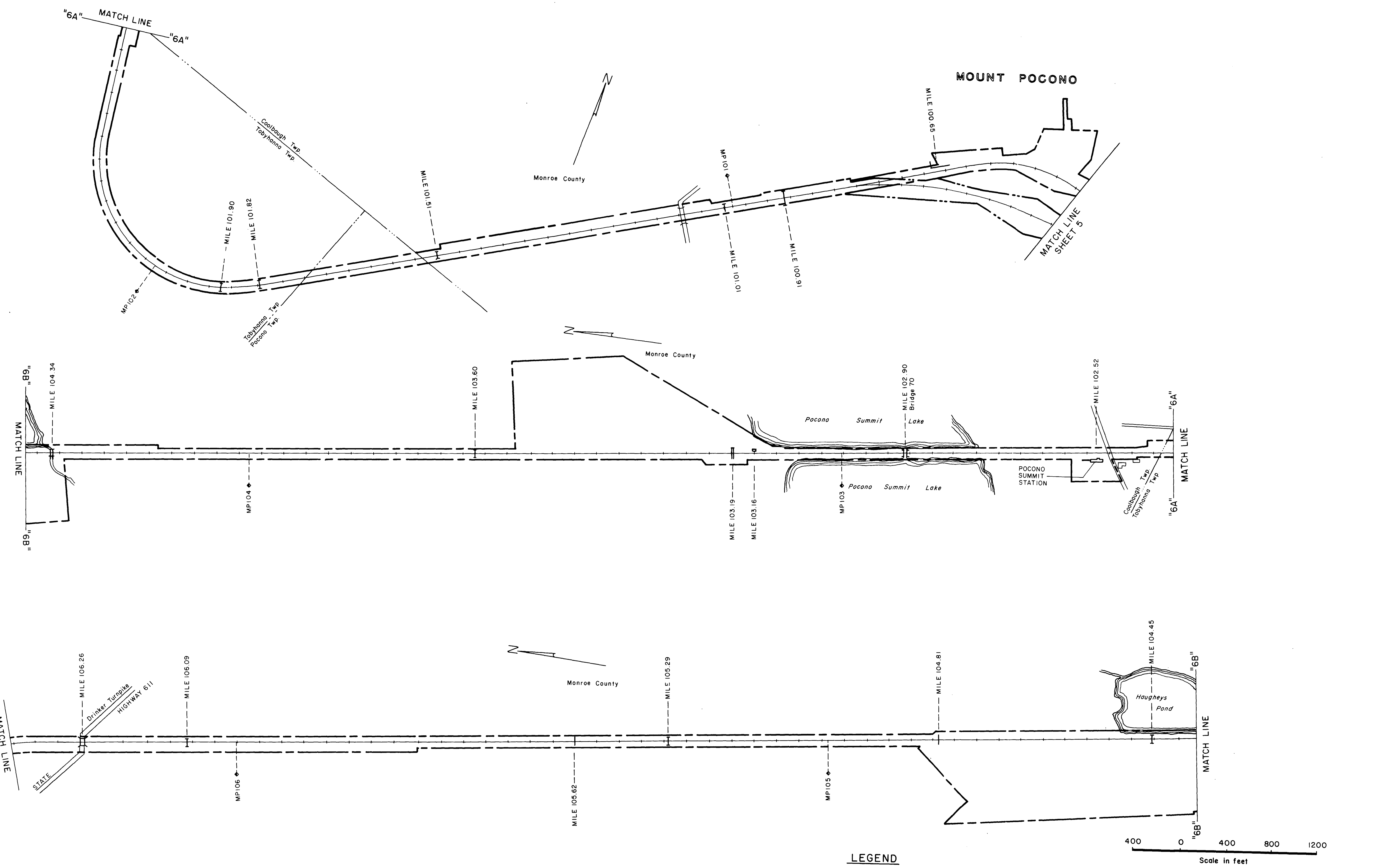
Sheet 5 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service
DSC/APR'90/903/20019

ON MICROFIL



LEGEND

1936 BOUNDARY

1918 BOUNDARY

SINGLE TRACK

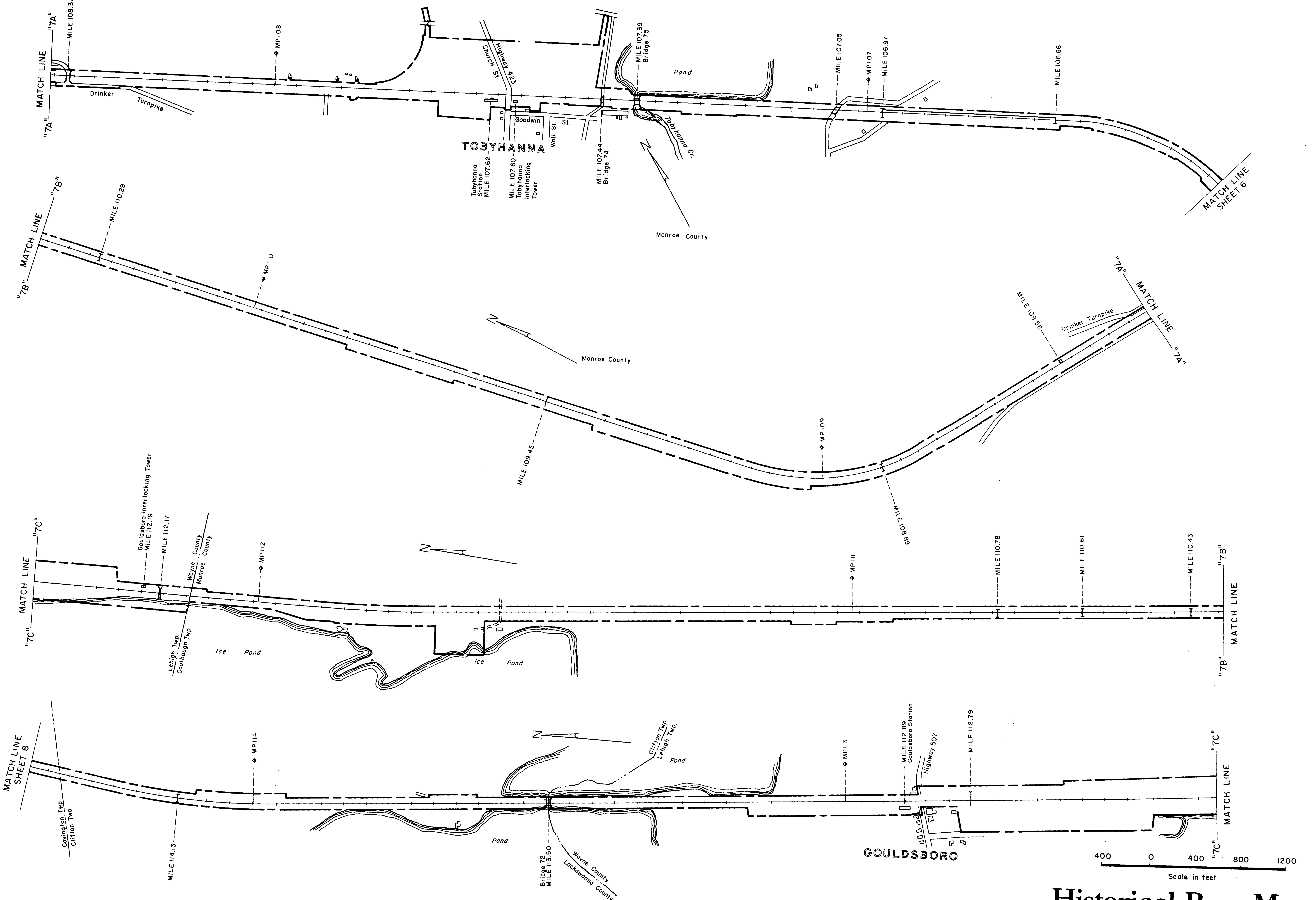
Historical Base Map

Sheet 6 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service
DSC/APR'90/903/20019



LEGEND

1918 BOUNDARY

SINGLE TRACK

Historical Base Map

Sheet 7 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service
DSC/APR'90/903/20019

Historical Base Map

Sheet 8 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service
DSC/APR'90/903/20019

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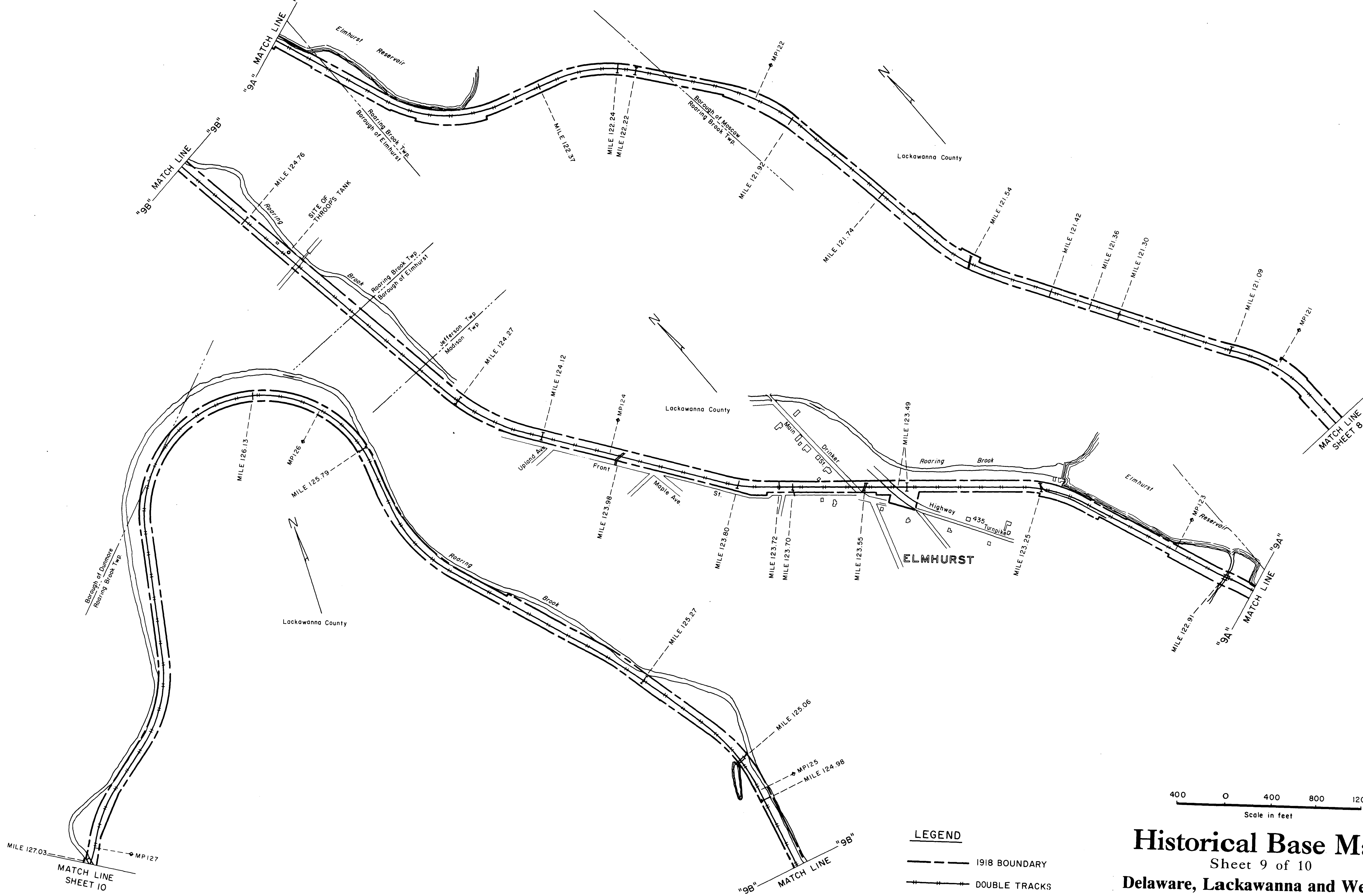

LEGEND

1918 BOUNDARY

DOUBLE TRACKS

Historical Base Map

Sheet 9 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service
DSC/APR'90/903/20019

ON MICROFIL

LEGEND

- 1918 BOUNDARY
- DOUBLE TRACKS

Historical Base Map

Sheet 10 of 10

Delaware, Lackawanna and Western Railroad Route

Scranton to Slateford Junction
Pennsylvania

United States Department of the Interior
National Park Service
DSC/APR'90/903/20019

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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