HISTORIC AMERICAN ENGINEERING RECORD

LYNN AVENUE BRIDGE HAER NO. PA-425

Location: Lynn Avenue over Conrail and P.B. & N.E. Railroads;
City of Bethlehem, Northampton County, Pennsylvania
UTM: 18/471620/4495380
Quad: Hellertown, PA 1:24,000

Date of Construction: 1927-1928

Builder: City of Bethlehem, Department of Engineering

Present Owner: City of Bethlehem
Bethlehem, PA

Present Use: Vehicular Bridge

Significance: The Lynn Avenue Bridge is an example of a Camelback Truss, a bridge commonly constructed throughout Pennsylvania during the first third of the twentieth century. Although the truss is a typical type, the abutments, obelisks, and pedestrian railings reflect a high level of aesthetic design for a rail crossing bridge. This, in part, is due to its direct association with the Bethlehem Steel Corporation and with the influence of the neighboring residents of South Terrace and Northampton Heights. The resource meets National Register Criterion C for its architectural significance.

Project Information: The City of Bethlehem in conjunction with the Pennsylvania Department of Transportation plan to replace the Lynn Avenue Bridge with a modern bridge on existing alignment. To mitigate the adverse effect, the State Historic Preservation Officer stipulated HAER documentation of the existing bridge and its setting.

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INTRODUCTION

The proposed project will involve the replacement of a mid-twentieth-century Camelback Truss bridge with a modern bridge on existing alignment. The bridge, which is structurally deficient and functionally obsolete, has significant problems associated with the approaches, deck, and superstructure. Despite its poor condition, the bridge remains in a relatively unaltered state with a high level of architectural detail for a bridge of its kind. The Lynn Avenue Bridge was determined eligible for listing in the National Register of Historic Places for its architectural significance.

PHYSICAL DESCRIPTION OF BRIDGE AND SETTING

This historic property carries Lynn Avenue over Conrail and the Philadelphia, Bethlehem and New England (P.B. & N.E.) Railroads, in the City of Bethlehem, Northampton County, Pennsylvania. The bridge is owned by the City of Bethlehem and is situated within an urban/industrial setting, immediately east of South Bethlehem. To the north of the bridge, lies a modern complex of buildings housing portions of the Bethlehem Steel Corporation, while to the south of the bridge lies a working-class neighborhood of historic and modern residences. The bridge crosses a series of railroad tracks and its setting retains little natural landscaping features.

Historically, the bridge connected two residential neighborhoods, Northampton Heights to the north and South Terrace to the south. The bridge's relationship to these neighborhoods and the local economy is reflected in its design and construction. The crossing contains a wide approach that tapers to a cartway width of 6.096 meters (20 feet), flanked by sidewalks measuring 1.524 meters (5 feet) each at its narrowest point (center of the bridge). Two concrete obelisks stand at both the northern and southern approaches to the bridge. The approach itself measures approximately 60.96 meters (200 feet) on both the north and south and is capped by a stone parapet with metal pipe railing. Two additional obelisks are found at both ends of the bridge superstructure. The structure sits on a slight rise and crosses eight sets of railroad tracks.

The ca. 1927-1928 Lynn Avenue bridge is a steel, single span Camelback Truss. The Camelback form is a variation of the Parker Truss which was developed by C.H. Parker. The truss is one of many variations that derived from the Pratt Truss, adding an inclined top chord with exactly five slopes. This bridge form typically measured between 30 and 90 meters (100 and 300 feet) and was commonly constructed throughout the country between the late nineteenth and early twentieth centuries.

The Lynn Avenue Bridge is a common form of the Camelback Truss fitting within the parameters described above. The bridge is approximately 60.96 meters (200 feet) long, with a 15.24 centimeter (6 inch) thick reinforced concrete slab deck. The abutments are concrete that have been scored to look like stone. The abutments are approximately 10.66 meters (35 feet) in height with a

vertical clearance from the tracks to the superstructure being 7.01 meters (23 feet). The horizontal clearance from curb to curb on the bridge is 6.09 meters (20 feet). The bituminous asphalt-covered deck of the bridge is supported by concrete encased, steel stringers (I-beams) with chamfered edges. These eight stringers are approximately 35.56 centimeters (14 inches) wide by 53.34 centimeters (21 inches) tall. Nine panels of steel cross-bracing are found underneath the decking which is supported by nine concrete encasements (or brackets). The bridge is a two-lane facility with 1.52 meter (5 foot) sidewalks on both the east and west sides. The sidewalks appear to have once been concrete but are now covered with asphalt. Modern guiderail lines the interior cartway. The bridge has a posted weight limit of 18.14 tonnes (20 tons).

The superstructure of the bridge is constructed of steel manufactured by the Bethlehem Steel Company of Bethlehem, Pennsylvania. It consists of a series of ten panels each measuring 6.09 meters (20 feet). The two center panels have steel cross bracing while the flanking panels each have a single steel brace. The lower chord acts in tension while the upper chord acts in compression. The upper chord contains nine double laced panels. The beams are held together by rivets, each measuring 2.22 centimeters (7/8 inches). A metal "fence" or handrailing lines the interior of the bridge structure. It consists of decorative metal lacing measuring 5.71 centimeters (2.25 inches) with a 7.62 centimeter (3 inch) galvanized pipe that acts as a handrail. The fencing measures 1.066 meters (3 feet 6 inches) tall.

The Lynn Avenue Bridge contains decorative detailing that is atypical to the Camelback Truss bridge type. Decorative details include the four obelisks along the approaches, the abutments, the handrailing along the bridge, and other decorative metal detailing. The concrete obelisks are square in plan and taper to a point. The base is composed of single recessed panels on three sides. Historically, the obelisks operated as lighting fixtures, but little evidence is present today of their historic function. Original plans note that the obelisks were approximately 4.25 meters (14 feet) tall with a decorative metal bracket attached approximately 3.048 meters (10 feet) above sidewalk grade. The lighting fixture was tear-dropped shaped and was noted as a "Novalux Fixture Form 25A Basket Unit" on the original bridge plans.

Additional decorative features include the poured concrete abutments and the handrailing along the bridge. Massive in scale, the abutments have been scored in a horizontal fashion to simulate stone. Metal handrailing is present along the sidewalks of the superstructure. Designed in a diamond pattern, this lacing is capped by a smooth, rounded, metal bar. The lacing is connected by a button-shaped pin at the intersection of each diamond. This small button-shape is echoed in the riveted construction throughout the bridge superstructure. The diamond shaped lacing is also echoed in the enlarged diamond pattern found within nine panels underneath the top chord of the bridge. Original plans of the bridge can be found at the City of Bethlehem Engineers Department, Bethlehem, Pennsylvania.

The bridge was inspected in 1989 and found to be in fair condition. The inspection revealed that the bridge had suffered a fair amount of deterioration, including spalling of the concrete elements and rusting of joints, bearing seats and connections. Water has penetrated the floor system, causing the spalling and rusting of metal elements. Abutments and wingwalls suffer from cracking and spalling. Despite the bridge's physical deterioration, it retains much of its original fabric and has not been significantly altered.

LOCAL HISTORICAL BACKGROUND

Introduction

Regional and township histories were consulted, together with family genealogies and histories. Nineteenth- and twentieth-century maps were used to pinpoint historic buildings and structures, to identify property owners, and to distinguish regional development within the Bethlehem area. Repositories consulted included those of the Pennsylvania State Archives; the Pennsylvania Bureau for Historic Preservation; the City of Bethlehem Engineering Department; the Linderman Library (Lehigh University, Bare Gallery, Special Collections); the Northampton County Historical Society; the Lehigh County Courthouse; the Northampton County Courthouse; Northampton County Archives; and the Bethlehem Public Library.

History of the Lynn Avenue Bridge

The Lynn Avenue bridge carries Lynn Avenue across Conrail and Philadelphia, Bethlehem & New England Railroad Company (P. B.& N. E.) railroad tracks in the southeastern corner of the City of Bethlehem, Northampton County. The area on the north side of the bridge, between the railroad corridor and the Lehigh River, is occupied by components of the Bethlehem Steel Company industrial complex. The area south of the bridge, between the railroad corridor and the crest of South Mountain, is largely residential.

When the North Pennsylvania Railroad Company built its main line through this area in the mid-1850s, the tracks cleaved what had until then been thinly populated farmland of Lower Saucon Township, well removed from thriving Bethlehem Borough with its river, canal, and railroad facilities. Bethlehem experienced a phenomenal growth spurt during the next few decades, however, fueled to a large degree by its burgeoning iron and steel industry. The town spilled over onto the south bank of the Lehigh River (where the immigrant-rich Borough of South Bethlehem was incorporated in 1865), then spread southeastward toward the future site of the Lynn Avenue Bridge (Kennedy 1976:119). The large terrace on the north side of the railroad tracks was developed in the 1890s as "Northampton Heights," twenty blocks of housing inhabited primarily be employees of the neighboring Bethlehem Iron Company (*Bethlehem Globe-Times* 1942:85). The community's heritage was reflected in the names given to its north-south-oriented streets: Anthracite, Bessemer, Carbon, Diamond, and Emery.

In response to repeated annexation attempts by South Bethlehem, the citizens of Northampton Heights had their community incorporated as a borough in 1901. By that time, residential growth had also taken hold on the south side of the railroad tracks (now part of the Philadelphia & Reading Railroad system), so the new borough reached out to encompass these buildings as well. Northampton Heights was thus divided on the diagonal by the railroad corridor into fairly equal halves, with the northeastern section the more residentially developed of the two. The southwestern section was on its way to catching up in 1918 when Northampton Heights yielded to two decades of pressure and merged with the newly-formed City of Bethlehem (*Bethlehem Globe-Times* 1942:85).

Following the completion in 1924 of a "Hill-to-Hill Bridge" across the Lehigh River between Bethlehem proper and "the South Side," Bethlehem Mayor James Yeakle turned his attention to another problem area. Among the municipal initiatives he proposed in his "Fourth Annual Message," delivered in January 1925, was the following:

> I also recommend the erection in the section of the City known as Northampton Heights of an adequate vehicular bridge to connect a section of ground lying south of the Philadelphia and Reading Railway East of Williams Street with section of Northampton Heights North of said Railroad at the same point. The citizens of this territory are greatly inconvenienced by lack of proper facilities to cross said railroad and are obliged to walk a great distance to cross said tracks with safety at the East Fourth Street bridge, or assume the hazard of sliding down a steep incline, crossing the railroad track at grade and then ascending a steep incline on the other side of said tracks. Most of the citizens including many of the school children attending schools on the North side of the railroad tracks prefer to assume the hazards involved rather than be obliged to walk great distances round about. This is not just; they should not be compelled to assume such hazards nor should they be required to walk great distances merely to cross the tracks of a Railroad Company. If the city were to spend approximately $30,000, a bridge suitable for vehicular traffic could be furnished for this territory and the hardship imposed by existing conditions removed. Such a bridge would surely serve a most useful purpose for all kinds of traffic and supply a much needed want. This matter should be considered by Council at an early date, and if possible to furnish the citizens relief without too great an expenditure, such relief should be given without delay" (Yeakle et al 1925:13-14).

Lynn Avenue was selected as the site for Yeakle's bridge, and on May 16 of that year a member of the city's Department of Engineering signed and dated blueprints for the bridge's steel-reinforced concrete abutments (City of Bethlehem Department of Engineering 1925). Approval and construction of the span were still a ways off, however. Two years later, Yeakle confirmed in his annual address for 1927 that the project was moving forward, albeit slowly:

> The Public Service Commission having approved plans for the construction of a bridge over the Reading tracks at Lynn Street, the only obstacle remaining is formal approval of said plans by the Reading Company. As soon as this approval is received, work should be started and it is hoped the year 1927 will see completion of this bridge connecting the territory South of the Reading tracks East of Williams Street with that section of the City North of said tracks (Yeakle et al 1927:10).

Formal approval appears to have been received shortly thereafter, as an engineering diagram for the metal portion of the single-span, steel Camelback truss bridge was drawn up on February 28, and a blueprint for the entire structure was completed the following day (City of Bethlehem Department of Engineering 1927). Mayor Yeakle made the following report of progress in his January 1928 annual message:

> During the year [1927], plans for the Lynn Street Bridge were approved by the Reading Railway Company and the Public Service Commission and an Order was issued by the Public Service Commission providing for the cost of the bridge and the approaches to be paid for by the City with the provision that the Reading Company pay one-half the cost of maintenance of the structure. At this writing, the construction work is well under way, with the south abutment completed and the north abutment under construction. The steel work is being fabricated ready for use early in 1928. This bridge will serve that portion of the Northampton Heights Section south of the Reading tracks and fulfills a much needed convenience for this section of the City. It will be of special benefit to the children from this section attending the Public Schools located north of the Reading tracks, as well as providing a more direct access to this section in case of fire. It should also bring about further development, from a real estate point of view, of the land south of the Reading tracks (Yeakle et al 1928:9).

Nine months later the Lynn Avenue Bridge was finally ready for traffic. The structure was "formally opened to the traveling public" during ceremonies held on the morning of Thursday, November 1, 1928. An article published in that day's edition of the *Bethlehem Globe-Times* provided the following account of the occasion:

> Characterized by Mayor James M. Yeakle as a structure erected by home labor out of home products (with the exception of the cement, which came from a not far distant point), the new Lynn Avenue Bridge connecting East Fourth Street with Williams Street was formally opened to the traveling public this morning.
>
> The mayor, with his pocketknife, severed the cord which barred the north approach to the bridge at 10:45. As he cut the cord he said: "I hereby declare this bridge, which has been for so long a time needed here, now open." Following the

words the group of prominent city officials, members of the Chamber of Commerce and business men who accompanied the mayor, carefully furled the large flag which had been suspended on the cord after which Mayor Yeakle said:

"This handsome structure, which you now see completed, I am proud to say, was planned by home talent—your own city engineer, Robert L. Fox, drew the plans. The material was supplied by a local firm—the Bethlehem Steel Company. The steel was put up by the Bethlehem Fabricators and the foundations and abutments and the remainder of the concrete work was put in by one of our own citizens, Contractor Robert S. Rathbun. All the material with the single exception of the concrete used, was produced in our own city. The huge span of 200 feet, capable of carrying without a shiver as many trucks loaded to 20 tons as would find room thereon, was planned by Mr. Fox, your own city engineer. And through the public spiritedness of H. A. Foering and W. J. Heller, the deeds to the land necessary were presented to the city. So now you see before you the fulfillment of a long felt want.

"It will supply the people living across the railroad in the section you see to the southward with ready access to the main avenue of traffic through this section of the city. I feel that the city is to be congratulated on having put this splendid viaduct across entirely as I have said with their own initiative, their own brains and their own materials."

Following the mayor's remarks, Secretary Abner H. Buck, of the Chamber of Commerce, said: "I feel it is fitting to make a few remarks on behalf of the citizens of the community. I want to congratulate the mayor and the council for them on the putting of this bridge here. It is, as the mayor has said, the consummation of a long felt want. It provides not only ready access to all parts of the city for ordinary business and pleasure, and for the children to use on their way to and from school, but for such emergencies as a serious fire or ambulance, or other sudden need; it is no less than a God-send to the people of the neighborhood. I congratulate the city officials on their remarkable foresight and that breadth of vision that has attended their conduct of the affairs of the municipality during their tenure of office and I am sure that I am voicing the appreciation and admiration of those responsible for this bridge when I say to you, Mr. Mayor, and your associates, 'Well done.'"

At the conclusion of Secretary Buck's remarks the mayor headed a procession which crossed the bridge to the other side. On arrival at the southern approach the mayor again drew his knife from his pocket and severed the cord which barred the approach from that end. After a snap of the group had been taken by the staff photographer of the *Globe-Times*, the several hundred people who had gathered to view the ceremony dispersed.

> Among those noticed in attendance at the function were Mayor Yeakle and his secretary, A. George Shoffner, City Engineer R. L. Fox, Councilmen Uberroth, Kline and Reuter, Secretary Buck, President W. J. Heller, Charles Goodenough, Morris Black, of the Chamber of Commerce; Vice President N. M. Emery, of Lehigh University; Alderman Ted Moffatt, of the Fifteenth Ward; Fred Helm, Constantine Collins, of the Chamber of Commerce; George M. Seifert, one of the oldest residents of the Fifteenth Ward; Superintendent of Police William Halteman, Captain Ernest Stocker and Patrolman Brogan, Eckhardt, Gilbert and Julian. Many residents of the section came out and witnessed the ceremony (*Bethlehem Globe-Times* 1928).

Yeakle noted in his annual message delivered the following January that the cost of the bridge's construction had been $110,000.00, nearly four times the amount he had projected four years earlier (Yeakle et al 1929:7).

In the years following World War II, Northampton Heights suffered what was officially diagnosed as "urban blight." Enforcement of a housing code adopted in 1960 led to the razing of all 259 buildings on the northeast side of the railroad tracks beginning in January 1967 (*Bethlehem Globe-Times* 1967). These buildings included residences, a handful of small businesses, several service stations, two churches, an Athletic Association quarters, and a former city fire station (*Bethlehem Globe-Times* 1965). By December 1968, the Heights had not only been swept clean, but was already re-occupied by Bethlehem Steel's new basic oxygen furnace and continuous casting facility (Wirth 1989). The Lynn Avenue Bridge no longer serves as a connector between two sectors of a historically-linked community, but as a conduit for commuters traveling between the Bethlehem Steel complex on the northeast side of the railroad corridor, and the residential district on the southwest.

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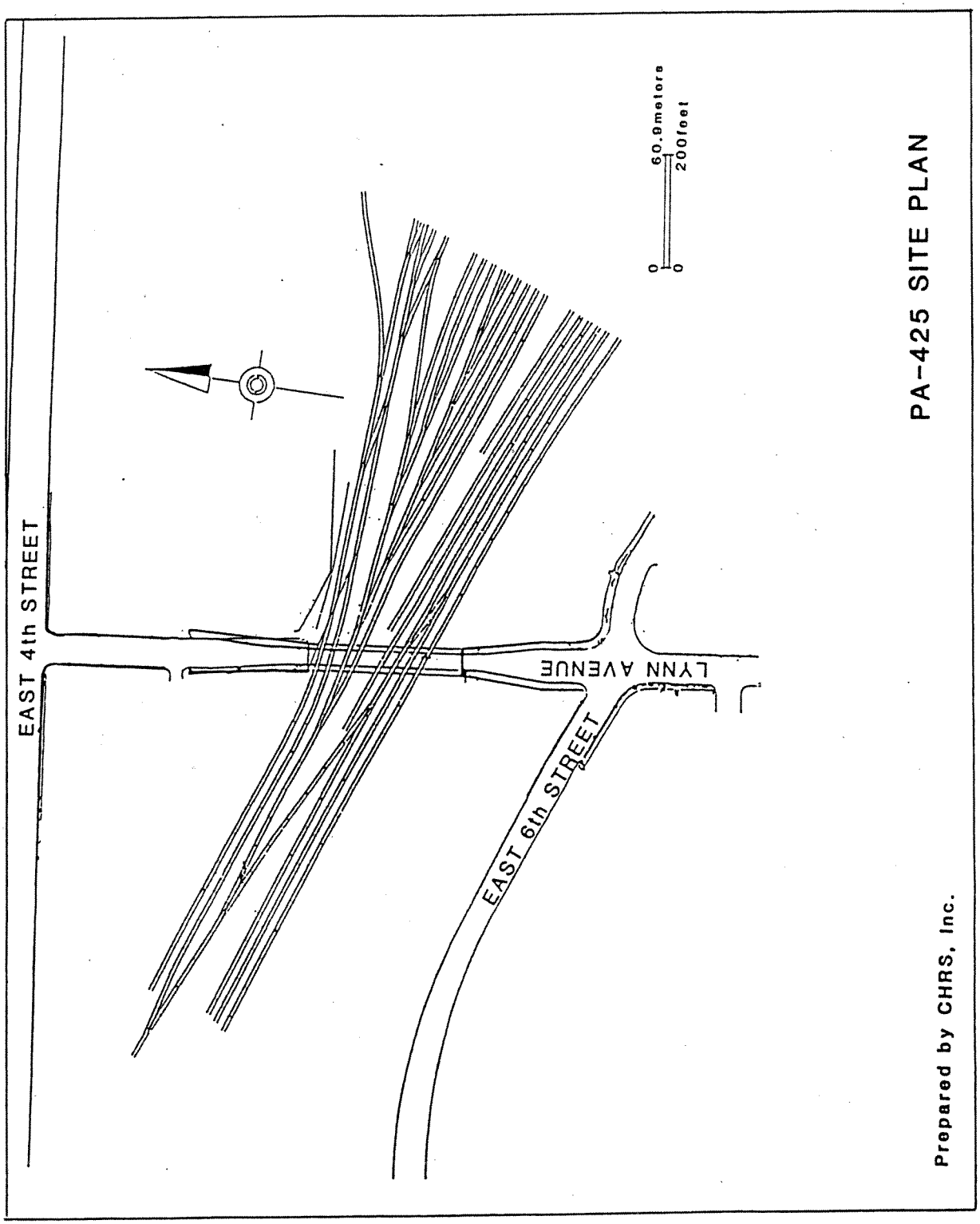
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