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Harpers Ferry Train Station

Historic Structures Report

NPS Project No. HAFE 76736; GWWO Project No. 0323



Prepared by GWWO, Inc. / Architects

July 2004

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GWWO, Inc. / Architects

Incorporating Research and Documentation Conducted By:
Andrew S. Lee, HAFE, NPS
Paul Newman, DSC, NPS
Patrick Macdonald, DSC, NPS
Historic American Engineering Record HAER WV-86
Division of Federal Occupational Health, US Public Health Service
Judi Q. Sullivan , Cultural Resource Center, NERO, NPS
Richard Chilcoat, Architectural Preservation Division, NPS



National Park Service Project No. HAFE 76736
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Cover Illustration: Harpers Ferry Train Station, photo dated 8-13-1931. Courtesy of B&O, no. 139.

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Executive Summary

In November, 2003, the National Park Service entered into a contract with GWWO, Inc. Architects from Baltimore, MD, to provide an Historic Structures Report (HSR) for the Harpers Ferry Train Station, Harpers Ferry, WV. Besides the lead firm, the documentation team included Faisant Associates, Structural Engineers, Baltimore, MD, and Henry Adams, Inc., Mechanical and Electrical Engineers, Towson, MD.

Considerable historical research on the building has been undertaken and completed by Andrew S. Lee, archeological technician for the Archeological Program at Harpers Ferry National Historical Park, which resulted in the 2003 document *Historical Background Report, Baltimore and Ohio Railroad, Harpers Ferry Station.* Paul Newman, architect with the Denver Service Center (DSC) of the National Park Service (NPS), conducted preliminary field investigation and documentation during 2001 and 2002. The Historic American Engineering Record (HAER) created measured drawings of the station and documented existing conditions through large-format black-and-white photographs finishing in 2003. The Division of Federal Occupational Health of the US Public Health Service, Philadelphia office, completed reports in September 2002, on Asbestos Assessment, Hazardous Materials, and Lead Bulk Sampling. Field documentation by the architects and engineers was conducted during January 2004. Judi Q. Sullivan of the Cultural Resource Center, North Atlantic Region of National Park Service, has completed a thorough Painted Finishes Analysis on the station. Richard Chilcoat, Architectural Preservation Division, Northeast Region of the National Park Service, studied methods to conserve the existing siding of the station in 2003. Materials from all of these research efforts and reports have been incorporated into this HSR.

During the spring of 2003, Patrick Macdonald of the Management Services Group, DSC, NPS; together with Paul Newman, developed a set of Alternatives for Treatment for the Train Station, working with the Harpers Ferry National Historical Park (HAFE). The DSC prepared for and led a Value Analysis Study during April and May of 2003, which established the alternative that would be recommended for implementation, and described the resulting Ultimate Treatment and Use. The study is summarized in *Value Analysis / Choosing by Advantage Study Report 2003-111: Rehabilitation of Train Station.* Materials from their report have been incorporated into this HSR, under Sections VII and VIII. During October-December 2003, the DSC oversaw a hazardous materials removal contract, which made the building safe for the public, staff and investigators.

The Harpers Ferry Train Station was designed by the Baltimore architectural firm of Baldwin and Pennington, and constructed in 1894 for the Baltimore and Ohio Railroad Company. In 1931, due to railroad track realignments, the station was moved to a new site approximately 700 feet northwest of its original location. In 2001, the National Park Service acquired ownership to six acres of historic property along the Potomac River containing the ruins of the 19th Century U.S. Armory Yard and the 1894 B&O Train Station from the descendent corporate owner, the CSX Corporation. CSX maintains ownership of the tracks and adjacent platforms to the tracks, the tunnel under the tracks, the south-side shelter covering the stairs down to the tunnel, and the Westbound Waiting Shelter located on the north side of the tracks.

The station, together with its adjacent structures, holds significance both architecturally and historically; the buildings are deemed eligible for listing as contributing structures to the district—and perhaps individually eligible for listing—on National Register, and on the List of Classified Structures of the National Park Service.

Proposed uses for the station include a CSX passenger waiting room for train travel, perpetuating its 110-year historical use. Since spatial needs for the historical waiting and shipping uses have diminished other spaces in the station will be occupied with interpretive venues managed by Harpers Ferry National Historical Park and by the town of Harpers Ferry. A cooperative management agreement between the three users and the owner is under way.

The station sustains a high level of its historic integrity, particularly as it relates to its current, non-original site. The recommendation to restore the exterior of the station to its condition immediately following its relocation in 1931 is offered. Most existing exterior materials that pre-date 1931 can be preserved. Several architectural elements will need to be reconstructed due to this recommendation, including the original east two-story tower and its associated chimney—demolished c1950, and the north side dormer over the ticket office—removed c1975. Extant architectural drawings and photographs of these elements will allow for an accurate reconstruction. Due to the introduction of several new uses inside the building, the interior treatment recommendation is one of rehabilitation. Character-defining spaces and features will be preserved, and in several cases reintroduced, but the floor plan will not reflect any specific historic arrangement.

Administrative Data

Name:	Harpers Ferry Train Station
Postal Address:	Potomac Street Harpers Ferry, Jefferson County, WV 25425
NPS Project Number:	HAFE 76736
HSR Document Number:	385 D284
Owner:	National Park Service, transfer from CSX, July-August 2001. (CSX currently maintains ownership of the tracks, the platform, the wood structure over the subway, the subway itself, and the Westbound Passenger Shelter located on the north side of the tracks.)
Global Positioning Location:	Latitude: 39° 32.4526' N Longitude: 077° 73.0962 W
Bench Mark:	M-1: 1927, 1929: Elevation 286.49 USCG&GS Brass Disc set in Concrete headwall, West end of B&O Trestle, at the confluence of the Potomac and Shenandoah Rivers
National Register:	The building is currently not included in the structures listed as contributing to the Harpers Ferry National Historic District. This building is likely eligible and should be listed.
List of Classified Structures:	The building is not currently listed, due to its recent acquisition. This building is likely eligible and should be listed.
HAFE General Management Plan:	Harpers Ferry National Historical Park is working with the Denver Service Center to generate an updated GMP. This document should be finished in 2006, replacing one that was created in 1982. The new management plan should include this structure in its consideration.
HAER Documents:	No. WV-86. Set of 14 drawings including site plan, plans, sections and elevations, completed in 2002; as well as thirty archival black-and-white photographs. [See Appendices A and C.]
Proposed Treatment:	Recommendations for treatment are included in *Value Analysis / Choosing by Advantage Study Report 2003-111: Rehabilitation of Train Station.* Denver: Management Services Group, DSC, 2003. [Portions of this document included within this HSR.]
Related Studies:	Lee, Andrew S. *Historical Background Report, Baltimore and Ohio Railroad, Harpers Ferry Station.* Harpers Ferry: HAFE Archeological Program, 2003. [Portions of this document included within this HSR.] Also refer to the Bibliography included in this HSR document, in the Appendix.

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Historical Background & Context

By Andrew S. Lee, Harpers Ferry National Historical Park

PART ONE: The Early History of the B&O at Harpers Ferry

The Founding and Early Challenges of the B&O Railroad

In the first third of the nineteenth century significant internal improvements caused a dramatic growth of domestic commerce in the United States. A transportation revolution occurred with the rapid development of turnpikes, canals, and railroads. Each of these improved modes of travel fueled the transportation revolution by reducing the cost and lessening the difficulties of internal trade. These years also were characterized by the swift expansion of the western frontier beyond the Appalachian Mountains. The population of the frontier boomed, resulting in the opening of many new markets. The seemingly unlimited potential of the region captured the attention and fostered competition between the merchants in the east. Businessmen of the principal Atlantic seaport cities—particularly those in New York, Philadelphia, and Baltimore—realized that whoever could capture the trade of the Ohio and Mississippi River region would enjoy an immediate advantage over his rivals. It was this race to reach the new western markets that sparked the drive to build transportation systems across the mountains and link east and west.

With the opening of the Erie Canal, the merchants of New York won the first advantage in the competition to tap the western trade. Completed in 1825, the canal connected the waters of the upper Hudson River with Lake Erie. It spurred growth all along its corridor. The financial success of the Erie Canal was immediate and it firmly established New York as the dominant eastern city in the quest for the western trade.[1] The superior economic position of New York City over its rivals caused a panic among the business communities up and down the eastern seaboard. New York's early success prompted Baltimoreans to act.

The businessmen of Baltimore realized they needed to adopt some course of action to keep pace with the brisk commercial traffic enjoyed by the Erie Canal. A canal, though, did not hold much appeal for them as a solution. Situated almost halfway between where the Susquehanna River enters the Chesapeake Bay and the Potomac River at Washington, Baltimore lacked its own waterway into the interior of the country. Surveyors explored possible connections with the Susquehanna to the north and the Potomac to the south, but a suitable route could not be found. Geographical, financial, and political obstacles left the merchants of Baltimore in a

[1] John F. Stover, *History of the Baltimore and Ohio Railroad,* (Purdue University Press, West Lafayette, Indiana, 1987), 6-8.

quandary.[2] Realizing they had little chance for a practical all-water route to the west, Baltimore's leaders in 1827 decided instead to support a new kind of transportation system developing in Britain—the railroad.

After nearly a century of experimenting and refining, the British had proven that railroads, at least for short distances over moderate terrain, were a practical alternative to canals. The business leaders of Baltimore were inspired by the British example. In February 1827 they approved a resolution that an immediate application be made to the Maryland legislature for an act to incorporate a company to be called the Baltimore and Ohio Railway Company.[3] The Company's goal was to build a railroad all the way to Wheeling, nearly 400 miles to the west on the Ohio River. It was a bold idea. It was, most historians of engineering agree, equivalent to a nineteenth-century moon shot. Properly trained individuals and the engineering knowledge required to build it simply did not exist in this country at that time. And though it was not the nation's first railroad, the Baltimore and Ohio (B&O) was a pioneer that proved the practicality of railroading over long distances and rugged terrain.

Almost as soon as construction began in 1828, B&O officials encountered delays. They soon realized that building a railroad all the way to the Ohio would take much longer than the five years that some optimistically hoped. Chief among the reasons for delays was disagreements between engineers and the board of directors. Because the company was, in effect, inventing the railroad as it went, debates arose on nearly every topic—debates on what type of track to use, how to prepare the roadbed, and what type of bridges to build. However, the most critical decision for the B&O's engineers was to determine the basic grade and curvature standards for building the railroad. Because there were so few precedents to gauge from, the engineers simply had no idea how much a steam locomotive would weigh, what it could pull, how steep a hill it could climb, or how sharp a curve it could take. Financial pressures and competition from rivals also forced the railroad to make quick, though not always the best, decisions with regards to engineering and construction questions. The primitive state of railroading led to much disagreement on how the railroad should be built.

The nature of the terrain presented another serious challenge to engineers during the early stages of designing of the railroad. The land to be covered was rough, ranging from rolling hills to high mountains. There were rivers with high rocky bluffs. Even a slight variation in grade and curvature standards in this type of landscape would make huge differences in construction costs. Should the

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[2] Herbert H. Harwood, Jr., *Impossible Challenge: The Baltimore and Ohio Railroad in Maryland,* (Barnard, Roberts and Co., Inc., Baltimore, Maryland, 1979), 4.
[3] Stover, *History of the Baltimore and Ohio Railroad,* 17.

terrain dictate the alignment or should the alignment be designed around the approximate capabilities of the railroad locomotive? In the end the engineers compromised. The maximum grade was set at 18 feet to the mile, or 0.3 percent, and 14 to 18-degree curves were allowed. As railroad historian Herbert Harwood, Jr. notes, it was exactly the wrong compromise. The grades could have been steeper, but the curves should have been gentler.[4]



Fig. III-1. B&O surveyors at work in the Potomac River Valley. (painting by H. D. Stitt.)

The Point of Rocks Dispute

The B&O built its line westward from Baltimore in essentially three surges. The first of these began in 1828 and ended in 1834 at Harpers Ferry, eighty-two miles west of Baltimore. The B&O's engineering corps quickly finished a reconnaissance survey for a route from Baltimore to the Potomac River (Fig. III-1). They selected a route from Baltimore that met the Patapsco River at Relay, Maryland, and then followed the Patapsco and Monocacy Rivers to the Potomac at Point of Rocks, Maryland.[5] From Point of Rocks the railroad would follow the river upstream to Harpers Ferry, a dozen miles to the west. However, at Point of Rocks the railroad came into direct conflict with its regional competitor, the Chesapeake and Ohio (C&O) Canal.

The railroad was completed to Point of Rocks, about seventy miles from Baltimore, on April 1, 1832. Progress beyond Point of Rocks was halted there, however, because of a bitter dispute with the C&O Canal. Both the canal and railroad, in their earliest planning, had proposed to follow the north bank of the Potomac to a point as far as Cumberland, Maryland. The problem was one of space. From Point of Rocks to Harpers Ferry, the shoreline is at several places reduced to a very narrow piece of land by the sheer cliffs of the Catoctin Mountains (Fig. III-2). Along this narrow shelf the projected routes for the two works overlapped and the two companies fought a long drawn out court battle to win the desired right-of-way.

The legal conflict was settled in 1833 when the Maryland legislature forced a compromise agreement with conditions quite favorable to the canal company. By the agreement the two improvements would share the narrow strip of land. One component of the agreement was that the C&O Canal would be responsible for building the railroad's roadbed in the three tightest spots, with the cost to be paid by the B&O. Another major component of the agreement forced the B&O to halt construction on the railroad west of Harpers Ferry until the canal reached Cumberland. Most important of all in regards to the fledgling railroad, though, was that the agreement

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[4] Harwood, *Impossible Challenge,* 8; James D. Dilts, *The Great Road: The Building of the Baltimore & Ohio, The Nation's First Railroad, 1828-1853,* (Stanford University Press, Stanford, California, 1993), 96.
[5] Harwood, *Impossible Challenge,* 9.



Fig. III-2. The terrain forced the C&O Canal and B&O Railroad to share limited space near Point of Rocks, Maryland. (NPS photo.)

required the B&O to abandon its original planned route to reach Cumberland using the north side of the river above Harpers Ferry.[6] This last stipulation would have serious engineering ramifications for the railroad when the B&O reached Harpers Ferry and contemplated its next move west.

The B&O Railroad Reaches Harpers Ferry

The railroad had a decision to make. The B&O's exclusion from the north shore of the Potomac meant that the railroad either had to cross the river at Harpers Ferry, or else bypass Harpers Ferry altogether by heading off instead in the direction of Hagerstown, Maryland. There were political pressures and financial advantages for the railroad to remain as much as possible in the state of Maryland. Another factor to weigh in this decision was the nature of the river and bluffs around Harpers Ferry. For the railroad to reach Harpers Ferry much work was required just to make room for the tracks. As daunting as the terrain around Harpers Ferry was, the prospect of connecting the line with the Winchester and Potomac (W&P) Railroad, a new thirty-mile rail line that was then being built from Winchester, Virginia along the Shenandoah River towards Harpers Ferry, was too much to pass up.

A B&O connection with the W&P, it was reasoned, would immediately bring traffic from the fertile Shenandoah Valley.[7] In this way a steady stream of revenue could be generated and the income used to make improvements to the completed line. Likewise, the new source of revenue could be used to fund construction of the line further west. There were also vague notions of continuing the line further south into Virginia, with the W&P envisioned as an extension of the B&O line. For the moment, however, the primary goal was to reach Harpers Ferry and connect with the W&P.

The B&O line was finished to the Maryland side of the Potomac opposite Harpers Ferry on December 1, 1834.[8] There, below the sheer, rocky cliffs known as Maryland Heights, the railroad ended at the east end of the Frederick and Harpers Ferry Turnpike bridge. The existing bridge was adequate for wagons and pedestrians, but useless for the passage of a railroad. The B&O therefore had to build its own bridge.

The problem facing B&O engineer Benjamin Latrobe, Jr. was a difficult one. Because of a bend in the river, the entrance to the bridge from the Maryland shore had to be placed where the railroad,

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[6] Harwood, *Impossible Challenge*, 29-31.
[7] Charles W. Snell, "The Town of Harpers Ferry in 1859, A Physical History," (Unpublished typescript, 65 pages, on file Harpers Ferry National Historical Park, Harpers Ferry, West Virginia, 1959), 31-32.
[8] Everhart, William C., *A History of Harpers Ferry,* (Unpublished typescript, 243 pages, on file Harpers Ferry National Historical Park, 1952), 25.

turnpike, and canal were crowded together on the narrow space below Maryland Heights. This unfortunate geographical arrangement prevented him from designing a gradual curve of the tracks onto the bridge (Fig. III-3). Because the bridge was practically at a right angle to the river, a fairly sharp curve was the only answer. On the Harpers Ferry side, the goal was simply to align the bridge directly with the grade of the W&P. Little thought was given to how the main line would eventually continue west from there. Ultimately, when the B&O did decide on a course out of Harpers Ferry, the alignment of the bridge proved to be quite unsatisfactory.



Fig. III-3. Railroad, canal, and turnpike competed for limited space on the Maryland end of the bridge. The awkward curve of the railroad track, seen here in 1865, hindered train movements here for years. (NPS photo.)

Early Railroad Structures in Harpers Ferry

When Latrobe's Potomac River bridge was completed in 1837, it connected the B&O to the newly completed W&P and transformed the old ferry landing into an area of bustling commercial activity. This commercial area was known as the Ferry Lot, a parcel of land retained by private landowners as the federal government acquired the surrounding property for its armory and arsenal buildings.[9] Just prior to the completion of the bridge, the B&O's president predicted that once the junction with the W&P was made, "the passenger and burden trains of the two companies will then stop, side by side, in the same depot, and the transit from one to the other will be effected promptly and with great convenience."[10] In 1836 the B&O purchased a lot at the west end of the new bridge on the south side of the W&P tracks. Here the railroad company erected a ticket office, a small 1 ½-story brick building measuring 30' x 20'.[11] Presumably, passengers loaded and unloaded near the ticket office. And contrary to the B&O president's prediction in 1836 of a single freight depot, the town lacked adequate freight and passenger facilities for years.

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[9] Cathy Gilbert et al, "Cultural Landscape Report: Lower Town, Harpers Ferry National Historical Park," (Department of the Interior, National Park Service, Harpers Ferry National Historical Park, Harpers Ferry, West Virginia), 3.8.
[10] *Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Railroad.* (Baltimore, 1836), 3.
[11] Snell, *The Town of Harpers Ferry,* 30.

The B&O and the W&P maintained separate freight depots and these were not even built until nearly a decade had passed. The B&O built a freight depot in 1846-47. It was a two-story brick structure of unknown dimensions.[12] The W&P freight depot was located along its right-of-way through the Arsenal Square on Shenandoah Street. The one-story brick building, built around 1847, measured approximately 125' x 30'.[13] Prior to the construction of these buildings, freight interchange was problematic; goods to be loaded or unloaded sat in boxcars on a siding across the Potomac River from the town.[14]

With the expectation of increased passenger traffic and greatly increased amounts of freight at Harpers Ferry, why did it take the B&O nearly a full decade to build a freight depot and no passenger depot at all? The answer is a simple combination of economics and tradition. First of all, the company preferred to spend its limited resources on facilities for accommodating its freight. Still in its infancy and scrambling to raise money for tracks and equipment, the company's goal was to start operations quickly and generate badly needed revenue. And since merchandise needed protection from weather and thieves, a freight depot was simply deemed more necessary than a passenger depot. Only after its financial health improved and revenue was generated, did the railroad turn its attention to a structure for passengers.



Fig. III-4. Many towns had no fixed depot in the early days of railroad travel. Hotels and taverns were used instead. (detail of a painting by H. D. Stitt.)

Furthermore, while the lack of a passenger station may appear to be a glaring oversight to a modern-day traveler, passengers in the 1830s were accustomed to fending for themselves. It was, after all, a long-standing custom for canal and turnpike travelers to make their own arrangements for food and lodging. The B&O Railroad, following the lead of turnpike operators, loaded and unloaded passengers at privately owned, pre-existing trackside structures (Fig. III-4). Taverns, stores, and hotels were the types of buildings most often used.[15] An 1836 advertisement notified residents of Harpers Ferry that "Passengers wishing to take the rail road cars at this place will, for the present, leave their names at the Carter's Hotel, where a flag will be hoisted to apprise the conductor on the road. Without such notice, the conductor may pass on with the cars, under the impression that there are no passengers."[16]

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[12] Snell, *The Town of Harpers Ferry*,32.
[13] Gilbert, *Cultural Landscape Report*, 3.59; Snell, *The Town of Harpers Ferry*, 32.
[14] Michael W. Caplinger, *Bridges Over Time: A Technological Context for the Baltimore and Ohio Railroad Main Stem at Harpers Ferry, West Virginia.* (West Virginia University Institute for the History of Technology and Industrial Archeology, Morgantown, West Virginia, 1997), 26.
[15] Janet Greenstein Potter, *Great American Railroad Stations,* (John Wiley & Sons, Inc., New York, New York, 1996), 3; H. Roger Grant, *Living in the Depot: The Two-Story Railroad Station,* (University of Iowa Press, Iowa City, Iowa, 1993), 7.
[16] *Virginia Free Press,* 24 March 1836, p3c3.

The Railroad Continues West on a Less than Ideal Alignment

By 1838 the B&O was ready to resume building the main line towards Cumberland, Maryland and then to the Ohio River beyond. The first problem, though, was how to get out of the Harpers Ferry bottleneck. Because of its unique physical geography, the town, federal armory, arsenal buildings, and railroads all competed for the limited level land by the rivers. The B&O had two alternatives: it could either continue along the Shenandoah River on the W&P tracks and then turn north outside of town or head directly west through the U.S. armory property. Because of the orientation of the Potomac bridge, the Shenandoah route was the preferred choice. A train crossing the bridge could continue upstream along the north shore of the river. By leasing six miles of the W&P's track, the B&O main line could leave the Shenandoah Valley near Charles Town, turn northwest towards Martinsburg and then rejoin the Potomac.[17] After surveyors demonstrated the feasibility of this route, the B&O entered into negotiations with the W&P. Motivated by reasons that are not clearly understood, the W&P refused to grant the B&O the necessary track rights.[18]

The W&P's refusal to share its tracks left the B&O little choice but to utilize the south bank of the Potomac River for its route west. This was not a desirable alignment because the large federal armory already occupied nearly all of the level land by the river (Fig. III-5).

To go this way the railroad company would have to obtain a narrow



Fig. III-5. The government armory occupied most of the level land on the Potomac. Circumstances forced the railroad to seek a right-of-way through the armory grounds. (NPS.)

[17] Dwight E. Stinson, "The First Railroad Bridge at Harpers Ferry," (National Park Service, Harpers Ferry National Historical Park, Harpers Ferry, West Virginia, 1970), 8.
[18] Harwood, *Impossible Challenge*, 42.

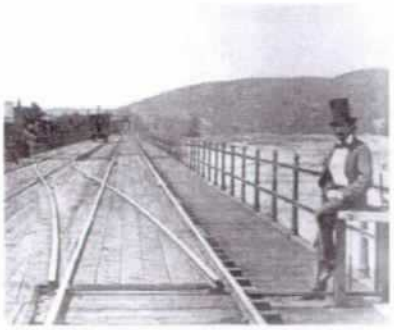


Fig. III-6. 1859 view of the elevated trestle, looking up the Potomac River. (West Virginia and Regional History Collection.)

right-of-way through the armory grounds from the government. The government was initially hesitant to allow the railroad access to the armory grounds. The fear of possible fires caused by embers and sparks from the train's steam engine was a major concern. Finally the two parties reached an agreement in mid-1838.[19] The agreement required the B&O to build an elevated track with the trestle to be placed atop a parallel set of walls along the edge of the armory that protected it from floodwaters (Fig. III-6).

The construction and future maintenance costs of the extensive masonry work and lengthy wooden trestle promised to be high. Worse than all of this, however, was the fact that this alignment intersected the railroad bridge over the Potomac at almost a right angle (Fig. III-7). The bridge was designed to connect head-on with the W&P, not to turn upstream alongside the Potomac. As things stood, there was no space to introduce a gradual connecting curve.



Fig. III-7. The junction of the armory trestle and the bridge resulted in a sharp curve. With tight curves at both ends of the bridge, the alignment was far from ideal. (NPS photo.)

[19] Caplinger, *Bridges Over Time*, 28.

With a bridge essentially pointing the railroad up the wrong river, B&O engineer Benjamin Latrobe faced yet another perplexing problem at Harpers Ferry—how to engineer an acceptable turn onto the armory wall while maintaining the junction with the W&P. Latrobe's solution was to re-design the western end of the bridge by inserting a switch and starting a curve 265' out on the bridge from the south shore. He then rebuilt the Harpers Ferry end of the bridge so that it resembled the shape of the letter "Y." The resulting curved span took the westward track around the curve and onto the trestle along the armory (Fig. III-8). The curve was still sharp and dangerous, but Latrobe made the best of a bad situation. He apparently justified his somewhat awkward design for the bridge based on the nature of the B&O's early traffic. In the early days of railroading the typical train was light, short, and slow. In any case, Latrobe's alignment was an inventive solution to the problem. And though the alignment was far from perfect, at least the railroad was headed west again.



Fig. III-8. The requirement to turn the tracks up the Potomac River necessitated rebuilding the Harpers Ferry end of the bridge. There was no room to maintain the junction with the W&P and still make an acceptable turn onto the armory trestle. (NPS photo.)

New-Found Freight and An Aging Railroad

Compared to its earlier progress, construction on the line west of Harpers Ferry moved rapidly. Construction began in 1839 and the line was opened in sections. The Harpers Ferry to Martinsburg, (West) Virginia section opened on May 21, 1842. Ten days later the railroad reached Hancock, Maryland. Work continued for a period of months on the section west of Hancock, with crews laying rails at a rate of one mile per day. Though still a long way from its Ohio River goal, the B&O main line finally reached Cumberland, Maryland on November 5, 1842.[1] With the line complete to Cumberland, the B&O finally had a source of sustainable heavy traffic—coal.

Although still a decade away from reaching the Ohio River, the completion of the B&O to Cumberland was a major accomplishment for the railroad. Coal began moving east in 1843, at first slowly, but then in ever increasing amounts as more mines opened around Cumberland and as the B&O improved its port terminals to handle the flow. For the year 1848, more than 66,000 tons of coal—about 40 percent of the railroad's entire eastbound freight—was shipped through Harpers Ferry on its way to Baltimore. Just two years later this had doubled to 132,000 tons, now nearly 60 percent of the eastbound freight.[2] Other freight included thousands of tons of iron, crushed stone, and tobacco. The boom in coal traffic and the money from this new business was certainly welcome, but it had a negative effect as well. It underscored some of the original engineering problems on the railroad between Harpers Ferry and Baltimore.

By the 1850s, the primitive state of early sections of the railroad was becoming a problem for the B&O. Not only was the massive weight of the freight wearing on the tracks, but also the types of locomotives used to haul it became heavier and heavier. During the 1830s the typical weight of freight and passenger locomotives was ten to eleven tons. Beginning in 1844, the B&O introduced powerful new freight-only trains that weighed between twenty and twenty-four tons.[3] And the problems only worsened as train lengths and their wheelbases increased.[4] With trains and weights of this type, the already serious problems of track types, bridges, and sharp curves became nearly impossible.

The B&O realized that improvement projects were long overdue. But with the line not yet completed from Cumberland to Wheeling, capital to make the improvements was limited. There were those within the company, including Benjamin Latrobe (now the Chief Engineer), who advocated immediate and permanent solutions to

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[1] Caplinger, *Bridges Over Time,* 34; Stover, *History of the Baltimore and Ohio Railroad,* (Purdue University Press, West Lafayette, Indiana, 1987), 54.
[2] Stover, *History of the Baltimore and Ohio Railroad,* 61.
[3] Stover, *History of the Baltimore and Ohio Railroad,* 57.
[4] Harwood, *Impossible Challenge,* 46.

the continuing irritations. The company, however, elected to spread out its improvements over a period of years, prioritizing the jobs and tackling the most serious ones first.[5] In 1845, Latrobe and his engineering crews were detailed to study the railroad's physical condition between Harpers Ferry and Baltimore. On the issue of track reconstruction he wrote:

> I cannot but reiterate the expression of my fears that this track will absolutely go down under the weight of this increased trade. Already it is carrying three or four times the trade of any similarly constructed track in the country, and the iron, which has borne up well under 15 years hard use, is now beginning to break up...The velocity with which trains are obliged to pass over it also creates risks which, although happily productive thus far of few disasters, are not a little to be dreaded...Without such reconstruction, it will hardly be possible, at any expense, to maintain the road under this augmented trade.[6]

The alignment at Harpers Ferry, its wooden bridge with sharp curves at both approaches, was particularly worrisome. Wendell Bollman, who was responsible for maintenance as B&O's Master of Road, desperately wanted to replace the timber bridge at Harpers Ferry using a new iron truss system of his own design. In 1851 the so-called "Winchester Span"—the portion carrying the W&P connection and the highway—was reconstructed with iron trusses supported by granite towers.[7] The patchwork repairs continued on portions of the main line, but the awkward layout at Harpers Ferry remained. Other projects kept taking precedence.

The alignment of the B&O Railroad as it passed through Harpers Ferry, though inefficient and even somewhat dangerous, proved to be a durable one. Even after repeated destruction and multiple rebuildings during the Civil War and abandonment of the armory afterward, subsequent bridges built at the crossing followed this same layout. Unfortunately, however, the design actually hindered efficient railroading operations at Harpers Ferry for years to come. A few minor improvements were made as finances allowed, but the tight curves continued to be a real operating burden for the railroad. Finally, after nearly sixty-five years, the railroad abandoned its stopgap measures and in 1892 decided to address the problems. In the end, a virtually brand new railroad was built at Harpers Ferry.

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[5] Harwood, *Impossible Challenge*, 46.
[6] As quoted in Dilts, *The Great Road*, 310.
[7] Stinson, "The First Railroad Bridge," 19.

PART TWO: The 1892-94 Improvements and Construction of the Harpers Ferry Station

The "New" B&O Railroad at Harpers Ferry

In the summer of 1892 the B&O began work at Harpers Ferry on a major improvement project that had been contemplated for some time. The project was designed to ease the operating problems long experienced at this important point on the main line. The B&O's bridge across the Potomac had become obsolete and dangerous in the face of ever increasing locomotive weights and trainloads. The serpentine nature of the tracks at both approaches to the bridge was also a serious problem. The evolving design of locomotives, in which the wheelbases were becoming more and more rigid, made these curves increasingly difficult to negotiate. Having faced these problems for several decades and only finding them worsening, the B&O was forced to formulate a plan of action. The plan for improvements at Harpers Ferry had several components that, when completed two years later, would cause the greatest physical change in the town's appearance since the dramatic days of the Civil War.

The principal components of the plan for the Harpers Ferry improvements were the construction of a tunnel through Maryland Heights; the replacement of the old bridge with a modern double-track steel bridge; the realignment of the road bed to run through the armory grounds on top of a 20' high embankment; and the erection of a new company-owned passenger station. B&O Chief Engineer William Lee Sisson prepared most of the tunnel, grade, and alignment changes and supervised much of the work. E. Francis Baldwin, the B&O's principal architect, designed the passenger station.

The Maryland Heights Tunnel

For over fifty years the B&O had been troubled by the lack of space at the base of Maryland Heights. The lack of space was due to the presence of a turnpike road and the C&O Canal, both running side by side with the railroad. The imposing cliffs of Maryland Heights and a bend in the river had prevented the railroad from designing a gradual curve of the tracks onto the bridge. To improve the situation the B&O contracted with Jones and Thorne & Company of Baltimore to bore an 815' long two-track tunnel through the base of the mountain in 1892.[8]

The nearly vertical rock face of Maryland Heights prevented the engineers from conducting a standard survey across the mountain to correctly align the tunnel, so the method of mathematical

[8] *Spirit of Jefferson*, 3 January 1893, p3c4.

triangulation had to be employed. Survey lines were projected around the base of the mountain from which angles and distances were carefully measured to a point on the center line of the tunnel on the east side. Workers then began drilling through the rock at both ends simultaneously using drills supplied by a steam-powered air compressor. In drilling the tunnel, first a small hole about 7' in diameter called a "heading" was made. The heading would later form the top section of the tunnel. As soon as the headings were far enough advanced, allowing room to drive the drill horizontally, work on the "benches" or lower part of the rock was begun. In this way larger masses of rock could be blasted out. This was slow work; crews advanced only about 18' per week. Begun in December 1892, the sound of dynamite explosions soon became common. By January the *Spirit of Jefferson* reported that the flock of wild goats living on Maryland Heights, which at first was spooked by the blasts, had become accustomed to the noise.[9] When the headings met in the middle in July 1893, they were just ½" out of line. Considered a feat of engineering in its day, the distance measured through the tunnel upon completion was 2 ½" less than originally calculated.



Fig. III-9. Completed in 1896 with the addition of brick portals, the Harpers Ferry tunnel eliminated the tight curve on the Maryland end of the bridge. (NPS photo.)

After completing the excavation of the tunnel, the rock was stable enough to support itself. Workers lined 80' at the west end and 45' at the east end with limestone masonry walls and a brick arch roof. At first the company constructed limestone portals on both ends of the tunnel, but the deep approach cuts at either end of the tunnel caused immediate problems and new portals had to be built. The steep cuts posed a safety hazard from above, as rocks falling from the cliffs were dangerous to employees and threatened to block the tracks. To remedy the situation, in 1896 construction workers extended the lining of the tunnel over 30' on each end and added sufficient covering over the arch to shield it from falling debris. New brick portals were also built (Fig. III-9). This lengthened the tunnel to 885'. The tunnel, oriented on nearly an east-west axis, almost completely eliminated the tight turn once required at the east end of the bridge.

The 1894 Bridge

Another major element of the improvements was the new double-track bridge across the Potomac River, located just upstream from the old Bollman bridge. Long overdue, a more modern, rugged bridge was required to handle the larger engines and trainloads pounding over the line. First the B&O purchased the Wager lot, a piece of land in the commercial area on the Harpers Ferry shore where a new abutment was built. Next, an abutment was built on the Maryland riverbank and cables were stretched from shore to

[9] *Spirit of Jefferson*, 3 January 1893, p3c4.

shore. The cables allowed construction crews to lower stones into the river that were used in building the bridge's masonry piers. Eight piers were constructed of local "Gettysburg Granite" and set on solid bedrock. The Penncoyd Bridge and Construction Company of Philadelphia fabricated the steelwork of the bridge's superstructure. James McLean was contracted for the trestle work, in which about 500,000 feet of lumber were required.[10]

The bridge builders experienced a setback in November 1893 when a shipment of construction materials sank during a storm on the Great Lakes, but the new B&O bridge was opened for traffic on April 12, 1894 (Fig. III-10).[11]

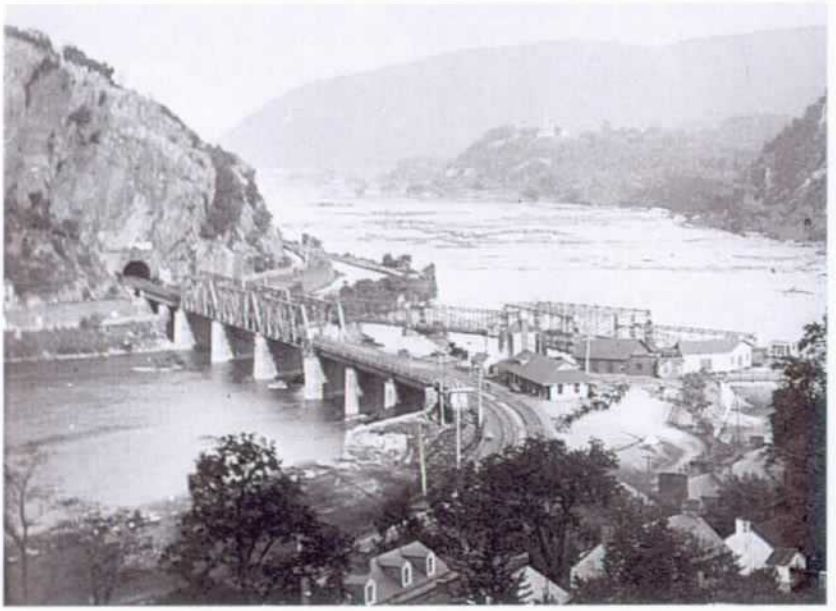


Fig. III-10. The new railroad bridge, seen here at left, was a central component of the 1892-94 improvements. (NPS photo.)

Its nine steel spans were a combination of six deck plate-girder spans and three Pratt through trusses.[12] Not only was the bridge designed to handle the heaviest loads of the day, it was also located on a better alignment. The new bridge was between 8 to 11' higher than the old bridge. This not only provided a better gradient, but also made the bridge less vulnerable to floods. The Harpers Ferry end of the 1894 bridge still resembled Latrobe's design of sixty years earlier, but the design incorporated a better junction to the Valley Branch (the former W&P line running along the Shenandoah River). Whereas the old bridge formed a 'Y' with the Valley Branch going straight across and the main line branching off, the new design reversed the order. With the new design, the junction remained over the river, but now the main line remained on a tangent and the

[10] *Spirit of Jefferson*, 29 August 1893, p2c3.
[11] *Virginia Free Press*, 11 August 1893, p3c4.
[12] Caplinger, *Bridges Over Time*, 62.

Valley Branch curved to meet it (Fig. III-11). Though not particularly long or massive, the new bridge represented state-of-the-art engineering in the 1890s. Still in use today, the bridge has been called an excellent representative of steel, pin-connected trusses and standardized bridge design of the period.



Fig. III-11. 1896 photo showing the realigned junction of the Valley Branch and main line. The new design kept the main line on a tangent while the Valley Branch, seen here on the left, curved to meet it. (NPS photo.)

Realignment of the Tracks

The U.S. government's abandonment of the armory grounds after the Civil War made the realignment of the tracks in Harpers Ferry possible. Since the mid-1850s the B&O was forced to run its trains along an iron trestle mounted on top of the stone river wall. The trestle and right-of-way extended 20' into the armory yard from the river wall.[13] In 1892 the B&O finally purchased a new right-of-way through the armory grounds from owner Thomas E. Savery. Armed with a new right-of-way that was considerably more inland, the railroad was free to abandon its original layout along the river wall (Fig. III-12). Instead they chose to run the tracks through the former armory grounds on top of a 20' high stone and earthen embankment.

[13] Snell, "Town of Harpers Ferry," 7.



Fig. III-12. The abandonment of the armory grounds after the Civil War made the realignment of the railroad possible. The new main line, built atop a 20' high rubble embankment, greatly reduced the curvature of the tracks. The old armory trestle was still in place when this photo was taken in 1896. (NPS photo.)

By sweeping the tracks broadly around on the town side rather than the river side of the old armory grounds, the result was a much gentler turn coming off the new bridge. This was a great improvement to what had been one of the tightest curves on the B&O's main line. With the need for the elevated trestle thus eliminated, the wood planking, ties, and rails were removed as was a small bridge spanning the armory boatway. The iron framework of the trestle remained in place until around 1898. A small section of the old tracks was maintained as an industrial siding. The siding served Savery's pulp mill located at the end of the former armory grounds.[14]

Another facet of the realignment was the modification of a small tunnel just west of Savery's mill and the armory grounds. Construction crews cut into the mountainside and converted the tunnel into an open cut. The hillside cuts, some of which were 80' deep, produced nearly 50,000 cubic yards of dirt and stone rubble. The resulting rubble was used to build the embankment across the armory grounds upon which the new track alignment was set. Rubble from the Maryland Heights tunnel excavation and from the construction of the new bridge piers was also used for that purpose. Chief Engineer Sisson calculated that, when broken up into smaller pieces, the volume of the rubble actually increased by 80 percent.[15]

The new embankment necessitated the removal of a cluster of structures from the old Ferry Lot at the Harpers Ferry end of the new bridge.[16] Notable among these buildings was the Potomac House restaurant, a three-story tavern/hotel that had served as the B&O's passenger station since the Civil War. On the river side of this

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[14] See U.S. Department of the Interior, Historic American Engineering Record (HAER), No. WV-61, "Potomac Power Plant," 1998, Prints and Photographs Division, Library of Congress, Washington, D.C. for the history of Savery's mill.
[15] William Lee Sisson, "Harpers Ferry Improvement." *Transactions of the American Society of Civil Engineers*, Vol. XXXII, October 1894, 352.
[16] Gilbert, "Cultural Landscape Report," 3.95.

building was a large two-story frame porch that opened directly onto the railroad platform. The B&O's trains stopped at the Potomac House regularly to permit the passengers to dine (Fig. III-13). The new alignment would also have required the removal of "John Brown's Fort," the old armory fire engine house made famous in the 1859 raid. The only building that remained in the armory yard, it had just recently been dismantled and shipped (by B&O rail) to Chicago in time for the 1893 World's Columbian Exposition.



Fig. III-13. The Potomac House restaurant, the three-story white building just left of center, served as the B&O passenger station at Harpers Ferry for years. Pictured here ca. 1885, it was torn down to make way for the new alignment through the armory grounds. (NPS photo.)

Several changes in the streets and roads were required by the improvements. The county road that ran along the Maryland side from a point near Sandy Hook, parallel with the railroad tracks, was changed to cross above grade at the east end of the tunnel and below grade at the west end. In doing this, the road was raised 35' at the east end and was cut down 5' at the west end of the tunnel. Potomac Street in Harpers Ferry, which runs parallel with the river, was raised 4' for a distance of about 800'. The lower end of the street was realigned to pass diagonally under a new overpass constructed as part of the realignment of the Valley Branch approach to the bridge. And because the newly created embankment blocked drainage of water from downtown Harpers Ferry, it was necessary for the B&O to construct a 186' long drainage culvert near the east end of Shenandoah Street (Fig. III-14).



Fig. III-14. Ca. 1896 view of the Shenandoah Street drainage culvert. The B&O's new railroad station sits on top of the embankment in the background. (NPS photo.)

Harpers Ferry's New Railroad Station

Overall, the series of improvements in 1892-94 dramatically altered the appearance of Harpers Ferry and gave the town its current street layout. Of all of the B&O improvements, the one that most excited town residents was the construction of a new passenger station. When it became clear that the old Potomac House would be torn down for being in the path of the newly designed main line, townspeople realized that a new station must be built. Rumors initially placed the new station somewhere near Savery's pulp mill at the north end of the armory yard, but it was finally confirmed that it would instead occupy a site in the angle formed by the new junction

of the main line and the Valley Branch.[17] The *Baltimore Sun* reported, "the old station will be torn away and a new stone station of handsome architectural design will replace it."[18] Other writers predicted the depot would be "handsome, convenient, & roomy" and a "fine, commodious" building.[19] But despite all of the eager speculation on the appearance of the future station, the fact was that no one really knew what the new station would look like. All that could be hoped for was a station that matched the town's perception of itself as a gateway for tourists and travelers and an important junction on the railroad's main line.



Fig. III-15. E. Francis Baldwin.

E. Francis Baldwin, "Architect for the B&O"

Architect E. Francis Baldwin (1837-1916) designed the Harpers Ferry train station (Fig. III-15). Though not formally trained at a university, Baldwin learned architecture in Baltimore as a draftsman and apprentice in the offices of Niernsee & Nielson during the 1860s. Ultimately his career spanned fifty years, periods of which he worked with partners and practiced on his own. Employed by a diverse clientele, Baldwin designed many types of buildings including churches, banks, office buildings and warehouses, railroad stations, hotels, municipal and public buildings, hospitals, schools, clubs, and residences. Though the greatest concentration of his work was in and around Baltimore, his buildings could be found from New York to Ohio, from Pennsylvania to Georgia.[20] Baldwin was a deeply religious man and he took a special interest in ecclesiastical works. In fact, one of his two biggest clients was the Roman Catholic Church. He received a distinguished award from Pope Leo XII for his designs of buildings at Catholic University in Washington, D.C.

Baldwin's other major client was the B&O Railroad. His career with the B&O began around 1872 when he was hired by company president John W. Garrett and designated the "Architect for the B&O Railroad." Some of Baldwin's first works for the company were built on the newly created Metropolitan Branch line, a railroad that ran from Washington, D.C. to the old main line at Point of Rocks.

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[17] *Spirit of Jefferson*, 16 August 1892, p2c4.
[18] *Spirit of Jefferson*, 29 August 1893, p2c3.
[19] *Spirit of Jefferson*, 20 September 1892, p3c3; 27 June 1893, p3c3.
[20] About 500 buildings or design projects have been identified as the work of Baldwin or Baldwin and his associates. About eighty percent of these were in Maryland. As of 1991, approximately one-third were extant. Prior to designing the Harpers Ferry railroad station, at least two of Baldwin's works were built in nearby Charles Town, West Virginia. In 1878 he devised plans for the correction of the faulty acoustics of the courtroom at the Jefferson County Courthouse (For details see *Virginia Free Press*, 7 September 1878, p3c3). Later, in 1892, Baldwin and a partner designed the highly acclaimed Hotel Powhatan (For details see *Spirit of Jefferson*, 12 July 1892, p3c2). After a brief period, the Powhatan came to be known as Wormley's Inn. In 1901 it was sold and reopened as Powhatan Female College. In 1914 the building was renamed St. Hilda's Girls School. It burned down in 1937.

Although it is not known for certain, the notable Baltimore architect is suspected to have supervised the B&O's construction of the distinctive, Gothic-style Rockville station in 1873.[21] One of his most famous works, the ornate Point of Rocks passenger station, was designed in 1875. It has been described as "the zenith of Railroad Gothic" architecture (Fig. III-16).[22]

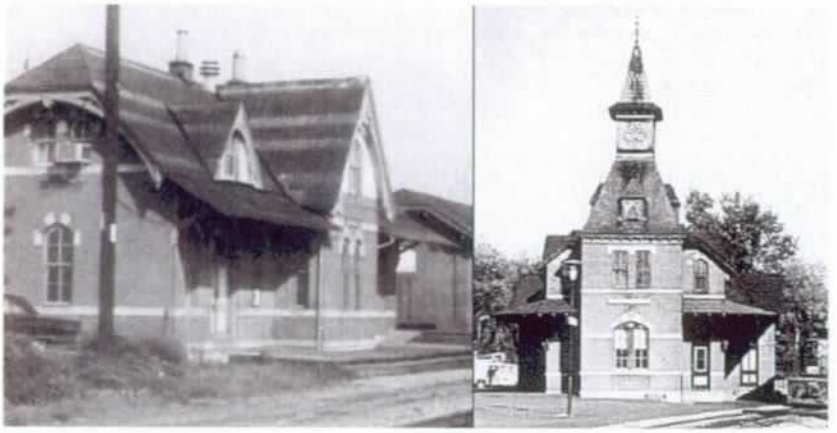


Fig. III-16. B&O passenger stations at Rockville (left) and Point of Rocks. (photos by H. Harwood.)

In 1883 Baldwin formed a partnership with his former draftsman Josias Peninngton. They collaborated on designs until Baldwin's death in 1916. Together they designed several prominent B&O buildings in downtown Baltimore, including the company's ostentatious headquarters building, the Camden Yards Warehouse, and the Mount Clare Roundhouse.[23] In the 1880s Baldwin designed several distinctive passenger stations for the B&O's Washington Branch line. His stations at Laurel and Hyattsville, both built in 1884, were ornate and substantial brick buildings (Fig. III-17).[24]



Fig. III-17. Baldwin-designed passenger stations at Laurel (left) and Hyattsville (center). The railroad company's headquarters (right) was designed by Baldwin and partner Pennington. (left: H. Harwood; center: Smithsonian Institution; right: B&O Railroad Historical Society.)

Baldwin's buildings, especially those of the 1870s and 1880s, incorporated characteristics reflecting the eclectic Queen Anne and Gothic Revival styles of architecture. Hallmarks of these Victorian-

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[21] U.S. Department of the Interior, Historic American Buildings Survey , No. MD-228, "*B&O Railroad Station and Freight House, Rockville, Maryland,*" 1977, (Prints and Photographs Division, Library of Congress, Washington, D.C.), 1.
[22] Harwood, *Impossible Challenge,* 429.
[23] Historic American Buildings Survey, No. MD-228, 1.
[24] U.S. Department of the Interior, Historic American Buildings Survey, No. MD-973, "*Baltimore & Ohio Railroad Station, Laurel, Maryland,*" 1990, (Prints and Photographs Division, Library of Congress, Washington, D.C.), 3.

era styles that often appeared in his works include towers; steep gabled roofs; large wooden support brackets; bay and oriel windows; and colored glass window accents. His passenger station designs were distinctive and picturesque, and though many had similar floor plans and served the same basic function, no two were exactly alike. Baldwin's career as B&O's principal architect lasted until around 1900. Table 1 provides a list of extant B&O buildings attributed to Baldwin.

Table 1. Extant B&O Buildings Attributed to E. Francis Baldwin.
(*from a list compiled by Carlos P. Avery, with additions by Herbert Harwood, Jr. and John P. Hankey)

YEAR	LOCATION	STATE	STRUCTURE
1873	Rockville	MD	Passenger Station
1875	Point of Rocks	MD	Passenger Station (Reconstruction)
1875	Keyser	WV	Passenger Station
1876	Martinsburg	WV	Passenger Station Addition?
1876-82	Mt. Airy	MD	Passenger Station
1876	Brosius (Hancock)	MD	Passenger Station
1882	Paw Paw	WV	Passenger Station
1883	Lexington	VA	Passenger Station
1884	Mt Clare	MD	Passenger Car Shop
1884	Sykesville	MD	Passenger Station
1884	Laurel	MD	Passenger Station
1884	Morgantown	WV	Passenger Station
1884	Gaithersburg	MD	Passenger Station and Freight House
1884	Rockville	MD	Freight House
1884	Mountain Lake Park	MD	Passenger Station
1885	Ellicott City	MD	Freight House
1885	Oakland	MD	Passenger Station
1891	Kensington	MD	Passenger Station
1891	Germantown	MD	Passenger Station (Reconstruction)
1891	Dickerson	MD	Passenger Station (Reconstruction)
1891-92	Frederick	MD	Passenger Station Addition
1892	Brunswick	MD	Passenger Station
1892	Washington	PA	Passenger Station
1892	Weston	WV	Passenger Station
1892	Winchester	VA	Passenger Station
1893	Quicksburg	VA	Passenger Station
1893	West Newton	PA	Passenger Station
1894	Harpers Ferry	WV	Passenger Station
1896	Baltimore	MD	Hendersons Wharf Warehouse
1896	Baltimore	MD	Mt Royal Station
1898-1905	Baltimore	MD	Camden Warehouse
no date	Zanesville	OH	Freight House



Fig. III-18a. The Kensington (above), Landsdowne, and Brunswick stations illustrate Baldwin's more modest designs of the early 1890s. (photo by Montgomery Co. Historical Society)

B&O Passenger Stations and Standardization in the 1890s

In the 1890s Baldwin's new passenger stations began to reflect the B&O's growing financial problems. The company was struggling to remain solvent and attention shifted away from architectural concerns. Major improvements to the line, like the tunnel and bridge at Harpers Ferry, were costly and left the B&O fewer financial resources to channel towards elaborately designed stations. Other expensive undertakings of the period included the completion of the B&O's Baltimore to Philadelphia line and the modernization of its terminals and shipyards in Baltimore and Chicago.[25] The railroad labor strikes, the nation-wide economic panic of 1893, and the ensuing depression all contributed to the B&O's problems. The increasingly cash-strapped railroad lost interest in fancy designs and, as a result, many of the stations erected along its lines during the 1890s were smaller and lacked the decorative embellishments of the earlier stations.



Fig. III-18b. The Landsdowne station. (photo by Smithsonian Institution)

Baldwin responded to the company's financial constraints by both reducing the scale of his designs and moving towards standardized station plans. Simply put, both strategies saved his client money. Rather than produce the more costly two-story brick structures characteristic of his earlier designs, Baldwin displayed his architectural flexibility by designing much more modest single-story frame buildings. The designs for the stations at Kensington (1891), Landsdowne (1892), and Brunswick (1892), all of which share certain design elements with the Harpers Ferry station, are typical of his smaller stations of the period (Fig. III-18a, b & c).

Another result of the B&O's frugality in the 1890s was Baldwin's development of a standardized pattern for passenger stations. The benefit of standardization was that stations could be reproduced cheaply with slight variations at multiple locations. Several rural and suburban towns in Maryland received these standardized Baldwin stations, including the ones at Landsdowne, St. Denis, and Morgan.[26] During the first few years of the twentieth century, standardization of B&O structures became even more commonplace. Not only did the practice encompass passenger stations, but it also extended to waiting shelters, signage, and trackside equipment such as lamp posts. To illustrate the extent that standardization occurred, it is interesting to note that a 1919 survey of B&O properties states that, with a few exceptions, the Harpers Ferry station is "similar to [building] Type W-4."[27] The railroad's use of standardized plans was



Fig. III-18c. The Brunswick station. (photo by H. Harwood.)

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[25] Stover, *History of the Baltimore and Ohio Railroad,* 165-66, 174-76.
[26] Harwood, *Impossible Challenge,* 128.
[27] Interstate Commerce Commission, "*Engineer Field Notes of ICC Parties Surveying the Physical Property of Railroads, 1914-1929*", (Baltimore and Ohio Railroad, Record Group 134, Vol. 61, National Archives and Records Administration, National Archives at College Park, MD), 1.

not a new phenomenon though. As far back as 1867, railroads had begun standardizing everything from locomotive parts to the ingredients used in dining cars.[28]

While Baldwin's use of standardized plans may have been encouraged by the B&O's financial health, such standardized stations can also be viewed as a product of the late nineteenth-century industrial age. For the first time, interchangeable parts and machine-sawn wood allowed railroad companies a quick and inexpensive way to erect depots. Most railroads had stock blueprints for stations, with several different styles in perhaps three sizes each. The blueprint was then tailored to fit a particular location's importance, its physical landform, and amount of traffic. The company's "bridge and buildings" crews easily constructed such plans, in some cases using modular parts. By making only slight modifications to the standard design, the company avoided monotonous duplication for travelers and satisfied local desire for a unique depot. For only a little extra money, distinctive differences could be made to a structure. The use of ornamental extras—roof bracketing, the addition of a finial, or fancy trimwork—were common and inexpensive ways to alter a stock blueprint.

Also, railroad companies were not oblivious to the benefits of standardization. By repeating certain design elements, they promoted an identity and distinguished their own stations from those of other companies. This purposeful repetition of architectural forms, or logotyping, can be considered one of the earliest examples of corporate identity campaigns.[29] For example, the standard depot of one company was easily recognizable by its beveled agent's window with a gabled dormer. Modern-day fast food businesses and advertisers know the value of the type of visual consistency that was practiced by the railroads.

Consistently applied paint schemes were used for the same effect. The early standard color scheme used along B&O lines was brown and "Indian red." In some locations this combination of colors was used until the late 1940s. From the 1940s on, the most frequently used paint colors were combinations of cream and black or cream and brown.[30] In this scheme, the trim was painted black or brown. A royal blue and gold leaf color scheme was used for some of the company's signage, but there is no evidence that it was employed at Harpers Ferry.[31] A passenger on the B&O instantly recognized B&O

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[28] Potter, *Great American Railroad Stations*, 11.
[29] Potter, *Great American Railroad Stations*, 12.
[30] "Sprucing Up the Right-of-Way." *Baltimore and Ohio Magazine*, April 1946. Reprinted in *Sentinel*, July-August 1985. (Baltimore and Ohio Railroad Historical Society, Baltimore, Maryland, 1946), 11.
[31] *Baltimore and Ohio Railroad, Standard Plans for Maintenance of Way and Construction.* (Akron Railroad Club, Inc., Akron, Ohio, 1977), 68-69.

properties by the familiar paint scheme. By utilizing repetitive architectural forms and adopting a corporate paint scheme, the B&O hoped to foster feelings of trust, dependability, and familiarity among its customers.

Description of the Harpers Ferry Station

Although Baldwin's original building design drawings for the Harpers Ferry station do not survive, the plans are described in the March 24, 1894 edition of the *Virginia Free Press*. It states, "the new depot building is to be about sixty feet in length, with two twenty by twenty feet waiting rooms, agents' office, ticket office, and freight office. It will be a wooden structure costing $8,000. New platforms are being constructed with 80,000 feet of lumber."[32] Construction crews began work on the wood-frame station in the summer. On August 14th the *Spirit of Jefferson* noted this activity and reported, "Work is in progress on the new B&O Railroad depot."[33] When the station was finished in the fall of 1894, the *Virginia Free Press* called it "well planned and neatly furnished."[34] The dimensions of the building, however, at 101' x 21', were larger than the newspaper's initial report. Situated on the large open platform formed by the curve of the new track alignment, the station became the focal point at the eastern end of Shenandoah Street.



Fig. III-19. 1930 photo of the Harpers Ferry train station. The two-story signal tower was easily its most distinctive feature. (NPS photo.)

Except for a distinctive two-story tower, it was a rather plain building (Fig. III-19). The station's tower and its slate-covered, hipped roof were its visually dominant features. The roof covering the single-story portion of the station was low pitched and interrupted only by two hipped dormers, one on each side of the building. The dormers each had three small windows with diamond-shaped glass panes. The tower had a pyramidal roof (also slate-covered) with a slightly steeper pitch. The slates, light gray in color, were hung in a staggered shingle pattern. Pole gutters funneled water from the roof into box-protected downspouts all around the building. A number of large decorative brackets beneath the overhang also tended to emphasize the roof. The walls were covered with horizontal clapboard siding and painted. A 1915 newspaper item states a "force of painters are refreshing the station and accompanying buildings with standard B&O red and brown." In 1929 it was reported that the "B&O station at Harpers Ferry has been greatly improved by being painted on the inside. The colors are soft shades of cream and tan."[35]

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[32] *Virginia Free Press,* 21 March 1894, p2c5; Other information on the station during this period, where not specifically cited, is derived from a ca. 1916 floor plan, a 1919 Interstate Commerce Commission valuation survey (see Appendix B), Sanborn Fire Insurance maps (see Appendix A), and photographs.
[33] *Spirit of Jefferson,* 14 August 1894, p3c1.
[34] *Virginia Free Press,* 6 February 1895, p3c3.
[35] *Spirit of Jefferson,* 20 July 1915, p4c1; 16 May 1929, p1c1.

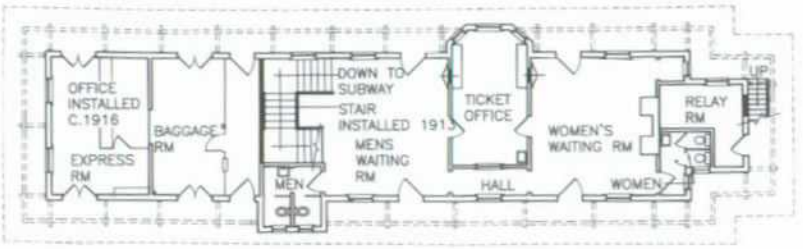


Fig. III-20. Ca. 1916 floor plan of Harpers Ferry station.

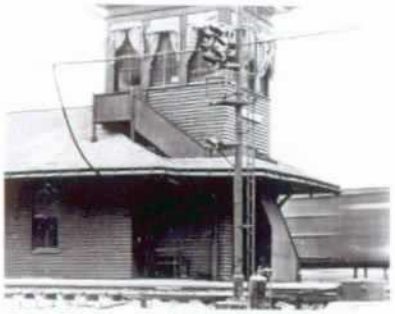


Fig. III-21. Exterior stairs were added to the tower around 1900. (Henry Freeman collection.)



Fig. III-22. Ca. 1910 view of tower and semaphore. (Henry Freeman collection.)

On the east end of the station was the two-story signal tower (Fig. III-20). A brick chimney with a flared top was built flush with the edge of the roofline on the west side of the tower. In 1900 a new interlocking switch system was installed for the Valley Branch junction. From that point on trains were controlled from the upper story of the tower.[36] Prior to that, the switching mechanism was operated manually. Entrance to the tower from the outside was initially gained through a door located on the southeast corner of the first floor. Though no documentation has been found, it can be assumed that interior stairs or a ladder led to the upper reaches of the tower. Later, around 1900, exterior stairs were added on the east side that wrapped around the tower, providing access to the upper story through a door on the south side (Fig. III-21). Photographs of the station around 1910 show a semaphore bracketed on the main line (north) side of the tower (Fig. III-22). Block tower signs with the telegraph call letters "HF" hung on the east and west sides of the tower. In addition, a station-identifying sign of "Harper's Ferry" hung on the east face of the tower.

In the interior, about one-third of the tower's lower story was taken up by the women's restroom, though the restroom was accessible only through the adjacent waiting room. The remainder of the tower's lower story presumably housed apparatus related to switching functions. One news account refers to the tower as the "telegraph tower," though it is not clear where the equipment was housed.[37]

Designed in a time when society deemed it proper to shield women from the more vulgar male population, the station had two waiting rooms—one for each gender. The waiting rooms were located on either side of the ticket agent's office and were connected to each other by a short hallway on the south side of the station. The waiting rooms had high mansard ceilings supported on exposed chamfered rafters. A wood cornice and baseboards provided additional ornamentation. The women's waiting room boasted a large brick fire box which probably housed a coal-burning stove (Fig. III-23). Each of the waiting rooms had a bathroom and each bathroom had two toilets and a sink. The women's bathroom, as

[36] *Spirit of Jefferson,* 20 November 1900, p2c2.
[37] *Farmer's Advocate,* 20 February 1915, p2c2.

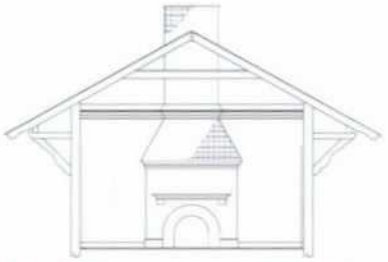


Fig. III-23. A large fireplace with mantel graced the women's waiting room. (adapted from a B&O drawing by John W. Ravenhorst.)



Fig. III-24. The men's bathroom, located beneath the dormer, stuck out from the south façade. (Henry Freeman collection.)

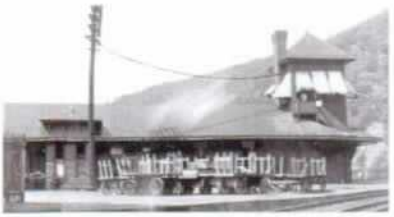


Fig. III-25. Ca. 1915. Baggage carts were used for loading and unloading cargo. (Henry Freeman collection.)

noted above, was incorporated into the first floor of the signal tower. The men's bathroom projected from the south façade (Fig. III-24). In general, waiting rooms in small town stations like Harpers Ferry were furnished with pew-like benches lining the walls or set back to back in the room's center.

Near the center of the station was the ticket agent's office. Typically, the agent at a combination freight and passenger station such as Harpers Ferry was responsible for numerous duties. Among his specific duties were selling tickets to passengers, operating the telegraph, announcing train departures and arrivals, stoking the heat stoves, washing windows, repairing tools, and picking up mail deliveries. In the midst of this already hectic job, the agent also filled the critical role of "operator." The operator was a pivotal figure who controlled train movements. He notified approaching train crews whether instructions or freight were awaiting by shifting indicators on a lighted semaphore known as the "order board."

At the Harpers Ferry station, the ticket agent's office had a bay window, allowing the agent/operator a clear view up and down the main line tracks and platform. The room had a dropped ceiling with attic space overhead. The ticket office was accessible by doors from both the men's and women's waiting rooms. The room also had two ticket windows and counters, one that opened into each waiting room.

The freight section of the station, located at the west end of the building, consisted of a baggage room and an express room. There wagons and teams of horses (and later motor vehicles) pulled up to the station to load and unload their cargo. Carts were used to help move the larger loads (Fig. III-25). Both the baggage and express rooms had two sets of double doors that opened inward.

Though little documentary evidence exists about the appearance of the station's interior, an early floor plan shows that the baggage room was partitioned into two spaces, a hallway spanning the width of the station (presumably for the ingress and egress of passenger's retrieving their baggage) and a larger storage area. An inventory of the property states that a large oval tub requiring floor support was located somewhere in the baggage room. The open-topped tub was constructed of white pine staves and wrought iron straps. Its function is not identified though a note indicates that the capacity of the tub was approximately 4000 gallons. Possible uses include a supply tank for the station's plumbing or storage of water for steam powered trains. The inventory also states that the tub dates to the year the station was originally constructed. It has been pointed out that a tub this size would take up much of the available space in the baggage room and it has been suggested that it may have been stored in the attic above the baggage room.

After 1916 the express room was also partitioned. That was the year the B&O removed all its outside buildings with the exception of a freight storage house. An advertisement in the *Farmer's Advocate* related to these improvements stated, "Edward Fossett's Traveling Express Agent Office will be in the main building hereafter."[38] When moved inside, the express agent's office occupied the northeast corner of the room, taking up approximately one-quarter of the entire space. The office was utilized for the obvious clerical duties involved with the freight and, more likely than not, contained a large scale. Due to their utilitarian function, freight spaces in most stations were typically left unfinished, or at best had wainscoting to protect the walls from damage by carts or shifting cargo. The freight space at the Harpers Ferry station, however, with vertical bead board from floor to ceiling, was an exception to this general rule. The windows of the express room were covered with diamond mesh guards. A sign identifying the station as "Harper's Ferry," identical to the one on the tower, hung on the exterior (west) wall of the express room.



Fig. III-26. The westbound waiting shelter. It is pictured here after an enclosure was built on the east end to protect passengers from the elements. (Henry Freeman collection.)

The Westbound Waiting Shelter and the "Subway for Safety"

In October 1898 a three-sided wooden waiting shed was erected on the north side of the tracks for the benefit of westbound passengers.[39] As depicted on a 1902 Sanborn Fire Insurance map, the shed was located directly across the tracks from the freight section (west end) of the station building. The shed was enlarged in 1910 by a 20' addition on its east end and covered with a metal roof. The addition resulted in a small area that was totally enclosed (Fig. III-26). This enclosed area was referred to as a "winter room."[40] As this name implies, the purpose of the addition was to provide additional shelter against the elements. Photographs show a vent pipe projecting through the waiting shelter roof, indicating the presence of a coal or woodburning stove.

Passengers arriving at Harpers Ferry on eastbound trains and those catching westbound trains were required to walk across the tracks. This was a severe safety hazard, as lines of sight at the crossing were poor in both directions due to the curve in the tracks. In addition, train traffic through Harpers Ferry was very high in the early 1900s. For example, in 1912 at least twenty-eight passenger trains and unnumbered freight trains passed the station daily.[41] People were killed every year going to or from the station and waiting shelter. Local newspapers ran stories referring to "the killing of people by B&O trains" and editors called for something to be done to "alleviate the death trap" that existed at the Harpers Ferry

[38] *Farmer's Advocate,* 28 October 1916, p2c3.
[39] *Spirit of Jefferson,* 11 October 1898, p3c3.
[40] *Farmer's Advocate,* 15 October 1910, p2c3.
[41] *Farmer's Advocate,* 31 August 1912, p2c1.

station.[42] The B&O responded with a plan to construct an underground passageway connecting the station and the waiting shed. The railroad also decided to erect a 700' long iron fence between the tracks so that all passengers would be required to use the subway and avoid danger.

Plans for the subway were drawn up in September 1912. It was to be constructed of concrete, 7' wide, 8' high, and 70' long (Fig. III-27). A contract to build the subway was awarded to Edward Brady & Sons of Baltimore in February and work commenced in April under foreman R. J. Raft. The subway, when completed in June 1913, was reported to be "well lighted at night by electricity, but requires the light of one lamp during the day." On the shelter side of the tracks the subway surfaced on the north side of the shelter and was protected by a new shed addition. Though it was initially planned to open into the women's waiting room, the new subway was accessed on the station side by stairways leading down from the men's waiting room. This modification to the station required a new partition between the waiting room and the baggage room.[43]

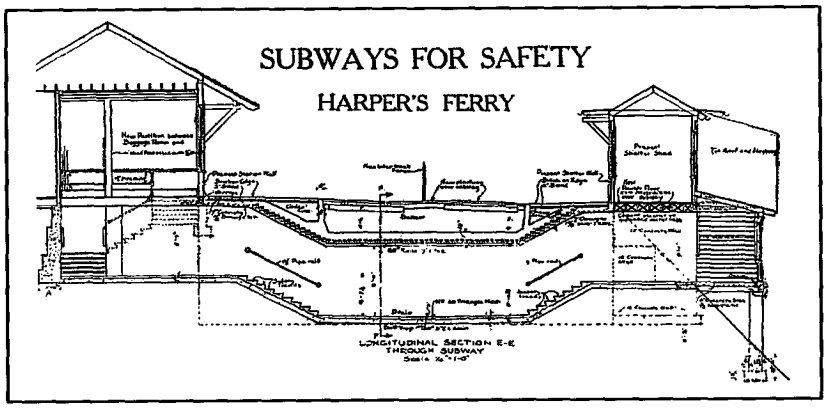


Fig. III-27. A concrete subway was built in 1913 to improve safety conditions at the busy station. (B&O Railroad Museum.)

The addition of the subway to the Harpers Ferry station was part of a larger "Safety First" movement started by the B&O in 1911. General safety committees were formed on each division of the railroad and the theme was stressed in a newly created magazine for employees. In 1912 the railroad announced it would spend $2.5 million on infrastructure and safety improvements between Brunswick and Harpers Ferry.[44] Plans were even drawn up for a brand new passenger station to be built in a Renaissance Revival-

[42] *Farmer's Advocate,* 31 August 1912, p2c1; *Virginia Free Press,* 13 February 1913, p2c1; *Spirit of Jefferson,* 7 January 1913, p2c6.

[43] For subway construction details see: "Subways for Safety", *Baltimore and Ohio Employees Magazine,* Volume 1, No. 8, October 1912, 10; *Spirit of Jefferson,* 11 February 1913, p3c2; *Virginia Free Press,* 13 February 1913, p1c4; *Farmer's Advocate,* 22 March 1913, p2c5; 5 April 1913, p2c2; 7 June 1913, p3c2; and 5 August 1916, p2c4.

[44] *Virginia Free Press,* 2 May 1912, p5c4.

type of style.[45] For reasons unknown, the proposed new station was never built and much of the money was dedicated to safety-related improvements. Drastic reductions in the numbers of deaths and injuries due to accidents over the next decade clearly indicated the success of the B&O's emphasis on safety. The improved safety record also had beneficial financial results for the company. The funds paid out to cover death and disablement benefits, for example, were cut by more than half.[46]

The addition of a number of electric lights at the Harpers Ferry station in November 1913 no doubt reduced nighttime accidents around the station. Workers initially laid conduit piping along the sidewalks and under the platform to establish thirteen electric lamps to light the grounds. Twenty-one electric lights were added inside the station in January and eleven additional lamps were placed along the platforms in May 1914.[47] It has not been determined if the station had electric lights prior to 1913. In 1898 a pulp mill on the nearby armory grounds was converted to generate electricity for the town and poles to light the town streets were erected. Many businesses and homes in Harpers Ferry added electric lights during the first decade of the twentieth century.[48]

The Grounds Around the Depot

The depot grounds consisted of wood platforms on the north, east, and west sides of the station and a large, flat unimproved area on the south side of the station. The south side of the station grounds was left unpaved for several years. Then, in 1904, a 7' wide x 110' long bluestone sidewalk was built that led to the edge of the rubble embankment on which the station sat. In 1910 the south side of the station was paved with bricks and stone curbs were added all around. Brick paving replaced the wood platform around the west end of the station and north side of the tracks. A wood fence ran along the edge of the depot grounds until 1913 when it was replaced with an iron picket-style fence. The iron fence, erected by contractor J. S. Burton, ran from the Valley Branch overpass, along the edge of the embankment, and down the station's driveway (Fig. III-28).[49]

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[45] See Andrew S. Lee's *Historical Background Report, 2003,* Appendix III, Drawings of Proposed Station, 1913.
[46] Stover, *History of the Baltimore and Ohio Railroad,* 256-57.
[47] *Farmer's Advocate,* 22 November 1913, p2c2; 17 January 1914, p2c4; and 23 May 1914, p2c3.
[48] See HAER, "Potomac Power Plant," for the role of Savery's mill in the production of electricity.
[49] *Farmer's Advocate,* 7 June 1913, p3c2.



Fig. III-28. In 1913 an iron picket fence was erected along the edge of the embankment and across the Valley Branch overpass. This ca. 1920 photograph illustrates how the depot was perched above the rest of lower town Harpers Ferry. (B&O Railroad Historical Society.)

Travelers and pedestrians reached the station from the town either by the driveway off Potomac Street or by one of two sets of stairs up the embankment. A set of wood stairs led to the station from the Valley Branch side, located between the freight office and a small building "used by track and linemen."[50] The other stairs were constructed of 10' wide slabs of stone and were located near the drainage culvert on Shenandoah Street. The stone stairs connected the train station with the town's commercial district as well as a cluster of hotels and restaurants on Shenandoah Street that catered to tourists and travelers. Safety railings were added to the steps in 1916. In 1916 the B&O also established a park on the grounds of the old armory yard between the station and the Potomac River. A walkway from the station and concrete steps were constructed to descend to the new park grounds. Workmen cleaned up debris around the old armory building foundations and landscape gardeners established flower beds and planted grass and shade trees.

Other B&O facilities and notable features of the depot grounds related to the development of Harpers Ferry as a tourist stop. The railroad company erected a monument in 1895 to mark the former location of the armory engine house, made famous as "John Brown's Fort." The obelisk monument is located on the side of the driveway near the edge of the embankment created during the realignment of the tracks. In 1897 the federal government also installed five tablets here commemorating the capture of Harpers Ferry during the Civil War (Fig. III-29). The John Brown monument and the interpretive

[50] *Farmer's Advocate,* 30 September 1916, p2c4. The two buildings flanking the stairs were either demolished or removed in 1916. The freight office was demolished and its functions were moved inside the station building. Also referred to as a "depot," the freight office probably temporarily served passengers during the construction of the 1894 depot. The other building was sold for $100 to farmer Peter Snyder of Loudoun County, Virginia and converted to a small shed or barn.

tablets were clustered in a small grassy area so as to be visible from the train and the platform.

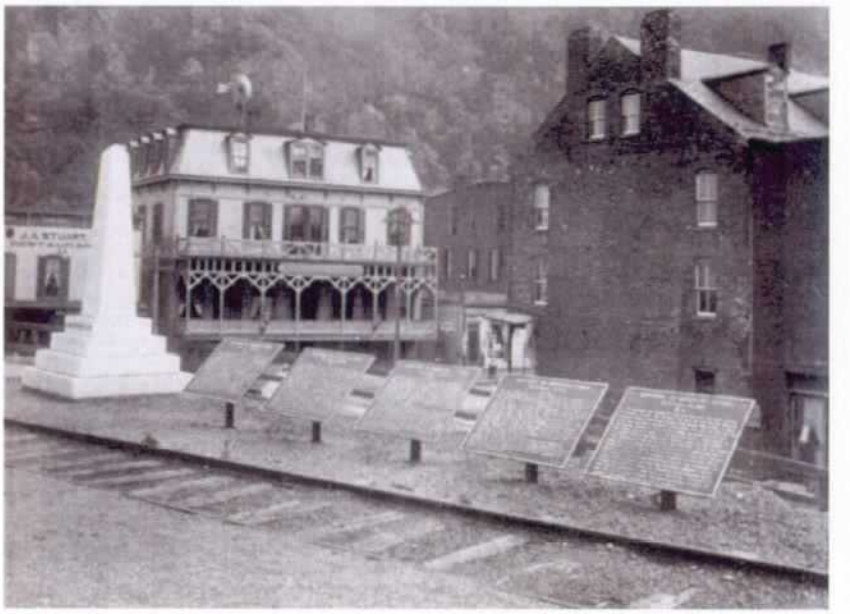


Fig. III-29. A monument marking the former location of "John Brown's Fort" and five commemorative tablets were erected on the grounds of the depot. (NPS photo.)

The B&O promoted Harpers Ferry as a tourist destination and from roughly 1880 to 1930, the town was a regular destination and departure point for numerous tourist excursion trains. Excursion trains left Harpers Ferry for the short trip to nearby Martinsburg and Frederick, and for the slightly longer trip to Winchester, Edinburg, Harrisonburg, and Staunton in the Shenandoah Valley. Other special excursion trains took tourists to and from destinations even further afield, to Atlanta, Philadelphia, New York City, Newark, Atlantic City, and Niagara Falls. Even the far-off tourist sites in Kansas City, Detroit, Omaha, and San Francisco were connected to Harpers Ferry by the excursion trains. Aside from bringing people to Harpers Ferry to see the area's tourist sites, B&O excursion trains also brought people to hold celebrations, reunions, political conventions, religious retreats, hiking trips, and for a whole host of other special occasions. Many of these events were held at Island Park, the B&O's very own "first-class excursion ground."

In 1878 the B&O purchased Byrnes Island, an island in the Potomac River a short distance upstream from Harpers Ferry. The company developed Byrnes Island into a summer resort and renamed it Island Park. In 1894, the same year the new train station was built, Island Park boasted an "eating house," several pavilions, a dining tent, refreshment stands, as well as swings, a skating rink, and a steam powered merry-go-round. A Ferris wheel was added by 1916. The attractions of the place were listed as boating, swinging, see-sawing, baseball, promenading, and wading. Operated under B&O management, the resort at Island Park was perhaps best remembered as the location of the company's annual employee

picnic from 1881 to around 1918. This popular event was always well-attended. In 1910, The *Farmer's Advocate* reported "the usual number" of attendees, estimating the crowd at 5,000 to 6,000 employees and family members.[51] The island was susceptible to flooding, however, and in 1923 the company dismantled its remaining facilities and leased the island to a local farmer for pasture.

[51] *Farmer's Advocate*, 6 August 1910, p2c3-4.

PART THREE: The 1930-31 Improvements and the Relocation of the Harpers Ferry Station

The B&O's Financial Condition

The reconstruction of the railroad at Harpers Ferry during the early 1890s served its purpose well for several decades. By the mid-1920s, however, freight train weights and speeds had so increased that even the broad curves of the 1894 realignment were beginning to restrict efficient railroading operations through the town. It was difficult and expensive to brake the heavy fast trains through the curves. So, beginning in 1930, the B&O began a second round of improvements to the main line at Harpers Ferry. As before, the betterments included a new Potomac River bridge, tunnel work, and realignment of the main line and Valley Branch junction. This time, however, rather than build a brand new passenger station, the budget conscious B&O picked up the Harpers Ferry train station—two-story tower included—and moved it to its current location. The 1930-31 improvements were the B&O's last major alterations to the railroad at Harpers Ferry. For the station in particular, several changes to the floor plan were made that more or less resulted in the building's current configuration.

Work began just in time, too, as the financial condition of the B&O Railroad Company deteriorated significantly after 1930. During the generally prosperous and expanding times of the 1920s, the B&O had spent nearly $100 million on railroad improvements. The 1930s, however, were very lean years for the company. Each year after 1930 brought a sharp decline in total traffic and revenue and the B&O's stock value plummeted. Money was hard to find. Naturally, this decline prohibited the company from making any significant improvements and even some basic maintenance had to be deferred. At first company officials perceived the drop in revenues to be only temporary. Therefore no reductions in the improvement program occurred in 1930 and the Harpers Ferry project was allowed to proceed. Before the full severity of the Great Depression was realized and the economic downturn brought even minor projects to a halt, the B&O managed to complete its Harpers Ferry improvement.

Times were different a year later when B&O President Daniel Willard wrote his *Annual Report* to stockholders. Reporting on the company's expenditures during 1931 he wrote, "Because of the general conditions prevailing, expenditures for additions and betterments were confined chiefly to improvements that had been under way and were nearing completion."[52] Whereas more than $10

[52] *Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Railroad.* (Baltimore, 1932), 8.

million dollars was spent during the previous year on infrastructure and equipment, in 1931 virtually no money was spent on these things. The rest of the decade was little different than 1931. Few years saw more than modest expenditures for maintenance of the railroad. Had the Harpers Ferry improvements been delayed by a single year, it is doubtful they would have occurred until America emerged from the Depression with the outbreak of World War II.

The 1930-31 Bridge and Tunnel Work

The principal feature of the improvements was a new double-track bridge, consisting of fourteen deck plate-girder spans. The new bridge was constructed at an angle to the river axis, making it approximately 50 percent longer than the 1894 bridge. The bridge met the West Virginia shore considerably upriver from the landing of the previous one, but still within the old armory grounds (Figure 30). It was also aligned on a tangent in relation to the tunnel, which once and for all eliminated the curvature on the Maryland side. On the West Virginia side, the new alignment resulted in a wide, sweeping curve (a 4 degree curve versus the previous 9 degree one) that permitted nearly unrestricted train speeds. The B&O's engineers finally succeeded in ridding the railroad of its troublesome, curvy track at Harpers Ferry.



Fig. III-30. The angle of the new Potomac River bridge, at far right in this 1931 photograph, helped eliminate the curvature at both approaches. The 1894 bridge is at center and the original span is at left in this view from the Maryland side. (Henry Freeman collection.)

Construction of the bridge proceeded rapidly. The Empire Construction Company from Baltimore was contracted to build the abutments and piers and B&O's Engineer of Bridges, Philip G. Lang, supervised the work. Steam shovels arrived on site in October 1930 and within a month, eleven of the thirteen massive bridge piers were completed (Fig. III-31).



Fig. III-31. Maryland Heights towers in the background of this 1930 view of the new bridge piers. Construction of the bridge progressed quickly thanks in part to low water levels. The 1894 bridge is on the right. (Jay Mauzy collection.)

Crews constructing the piers took full advantage of a protracted drought that the area was experiencing. Because of the drought, the waters of the Potomac neared record low levels, permitting men and heavy equipment to work in the riverbed with only minimal cofferdams. The conditions were so favorable that the work, originally estimated to take nine months, instead was finished in five. "No grass has tickled the soles of those engaged on this work," Lang wrote of the rapid rate of construction.[53] The bridge piers were set on solid bedrock and rose 35' above the foundations. Four thousand cubic feet of reinforced concrete was used in their construction.[54]

The American Bridge Company was hired to complete the superstructure of the new bridge. They fabricated the steel girders, which were then brought to the site on flatcars and hoisted into place by a rail-mounted crane (Fig. III-32). The bridge was built using four lines of parallel girders and approximately 4.4 million pounds of structural steel.[55] The rails were placed on wood crossties resting directly on top of the girders. The tracks averaged 47' above the river. Wood walkways were built on both sides of the tracks and "goose-neck" light posts lined the West Virginia end of the bridge. Though not nearly as graceful as the B&O's two previous Potomac River bridges, the 1931 bridge was functionally far superior.

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[53] Philip George Lang, "Beating 'Ole Man River: The Reconstruction of Our Potomac River Bridge at Harper's Ferry, W. Va." *Baltimore and Ohio Magazine*, December 1930, 20.
[54] Jeffrey R. Hollis and Charles S. Roberts, East End: B & O's "Neck of the Bottle." Barnard, Roberts and Co., Inc., Baltimore, Maryland, 1992, 30.
[55] Hollis and Roberts, *East End*, 30; Caplinger, *Bridges Over Time*, 69.



Fig. III-32. The 1930-31 steel girder bridge. (NPS photo.)

On March 6, 1931, before construction was even completed, fire swept rapidly from one end of the bridge to the other after a workman accidentally dropped a red-hot rivet into a barrel of creosote (Fig. III-33).



Fig. III-33. Fire damaged the new bridge before construction was completed. Fortunately, the cash-strapped B&O was not responsible for the $200,000 loss. (NPS photo.)

The newly laid crossties had been soaked in creosote and burned so fiercely that the steel girders were warped and weakened. Seven and a half of the fourteen spans and thirty of the girders had to be replaced. The damage was estimated at $200,000. Fortunately, the responsibility for the loss did not fall on the budget-minded B&O. At the time of the fire, employees of the Empire Construction Company were in charge of the work and the bridge had not yet been turned over to the railroad.[56] The necessary repairs were made quickly and the bridge opened for traffic on June 1, 1931.[57]

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[56] *Shepherdstown Register*, 9 April 1931, p4c3.



Fig. III-34. The B&O modified the Maryland Heights tunnel to allow the convergence of the tracks within. (Henry Freeman collection.)

Another important feature of the improvement was the modification of the tunnel through Maryland Heights. The angle of the new bridge required that the west end of the tunnel be widened, or "bell-mouthed," to a width of 45'. This widening also allowed for the convergence of the tracks from the old and new bridges at a location just inside the tunnel (Fig. III-34). This unusual arrangement is one of the few in-tunnel interlock junctions in the nation.[58] Additional alterations to the tunnel removed clearance restrictions. A new reinforced-concrete lining and portal were also added, giving the tunnel its current appearance.

Other changes were made to the railroad on the West Virginia shore. The abutment of the new bridge was set back from the armory river wall. The approach to the bridge required that another fill embankment be made on the former armory grounds (Fig. III-35).



Fig. III-35. The 1930-31 realignment required another fill embankment to be placed on the former armory grounds. Note the armory building foundation visible in the photo at right. (Henry Freeman collection.)

Once again, the 20' high fill covered portions of several of the old armory building foundations. Three temporary frame structures and an outhouse were erected on the old armory grounds near the base of the new embankment. Bulldozers prepared a roughly triangular-shaped platform that stretched from the abutment all the way to Potomac Street. The flat area, which would become the new home for the passenger station, was graded and used as a staging area for construction supplies (Fig. III-36). Access to the new depot grounds was gained via a driveway off Potomac Street. The surfaces of the driveway and new depot lot were left unpaved.

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[57] Philip George Lang, "Ninety-Four Years of Bridges at Harpers Ferry." *Engineer News Record*, September 17, 1931, 448. Incredibly, the bridge would catch fire two more times, once on April 11, 1951 and yet again on June 9, 1956. The 1951 fire began when a train passed over the bridge with its ash pan door slightly ajar, accidentally starting the blaze. The 1956 fire began when a coal train derailed, setting both the coal and bridge on fire. To halt the spread of the fire, firefighters tore up sections of the wood platforms that led out about half way across the bridge. Eyewitnesses reported that fire trucks coming down into lower town Harpers Ferry on (then) Rt. 340 had difficulty getting water to fight the fire because the river was low. After 1956 B&O installed fireproof coatings and firestops to prevent future disasters, a precaution they had previously deemed too expensive.

[58] Hollis and Roberts, *East End*, 32.



Fig. III-36. A workman prepares the site for the relocation of the Harpers Ferry train station. (NPS photo.)

Another feature of the new alignment was the rearrangement of the rails for through traffic. After 1931, the 1894 bridge carried only the trains of the Valley Branch. A single track of the old main line was left in place to connect the two bridges on the Harpers Ferry side. This connection between the 1894 alignment and the new main line was maintained as a detour for emergency purposes for several years. It was eventually converted to a nineteen-car siding in 1958.[59] When the 1930-31 improvements were completed, for a period of five years, until the destruction of the Bollman bridge in the 1936 flood, all three of the B&O's Potomac River crossings and alignments could be seen side by side (Fig. III-37).



Fig. III-37. This aerial photograph, taken in 1931 just prior to the relocation of the station, shows all three Potomac River crossings and alignments at Harpers Ferry. (NPS photo.)

[59] Hollis and Roberts, *East End*, 34.



Fig. III-38. Moving the west bound waiting shelter. (NPS photo.)

Relocation of the Harpers Ferry Station

As early as 1925 local newspapers were speculating on the proposed realignment through Harpers Ferry. The *Farmer's Advocate* informed its readers that heavier locomotives and freights would compel the B&O to build a new bridge and make its curves longer and straighter. Though the reports were characterized at that time as "rumors," the paper correctly predicted that such a realignment would require the relocation of the station somewhere "farther up the Potomac."[60] In fact, the station and its companion westbound waiting shelter were moved several hundred yards upstream and placed at the west end of the new bridge.

The westbound waiting shelter was the first structure relocated. Compared to the station, the shelter's relatively small size and light framing made it the easier of the two tasks to complete. In February 1931, workmen utilized a rail-mounted crane to lift the shelter onto a flat railcar and move it to the new location (Fig. III-38). The structure was left largely intact, except for a minor change in its river-facing wall. There the sliding door that provided access to the 1913 subway stairs was removed. The resulting opening was then enclosed. The stairs, too, were torn away and the old subway tunnel was filled in prior to the relocation.



Fig. III-39. At the new site, the B&O built a subway to provide safe access to the waiting shelter. (B&O Railroad Museum.)

At the new site, pedestrian access to the shelter was once again controlled by means of a cast-iron fence between the two sets of rails. A new concrete subway was built. The tunnel passed below the tracks and through the bridge abutment. On the eastbound side of the tracks, a new subway-covering shed was built. It rested on a concrete foundation and was covered with tongue and groove siding that matched the passenger station building (Fig. III-39). Later, when the station was relocated, the new subway-covering shed was connected to the main building by a matching slate roof.

In the meantime, the B&O prepared to move the passenger station to its new location. Before the move, during the month of March, several changes were made to the building's floor plan (Fig. III-40; see also Appendix A). Many of the changes were made in order to upgrade the building's heating system once the station was moved to the new location. The most drastic alteration in this regard was the conversion of the women's waiting room into a boiler room. The boiler for the existing hot water furnace, originally installed in 1925, was to be moved to the former women's waiting room and adapted for steam heat. The plan for the new heating system did not require the large firebox or such a large brick chimney and these features were therefore removed. Also the openings on both sides of the firebox were closed off, effectively cutting off access to the tower from the inside of the station.

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[60] *Farmer's Advocate*, 28 November 1925, p1c1.

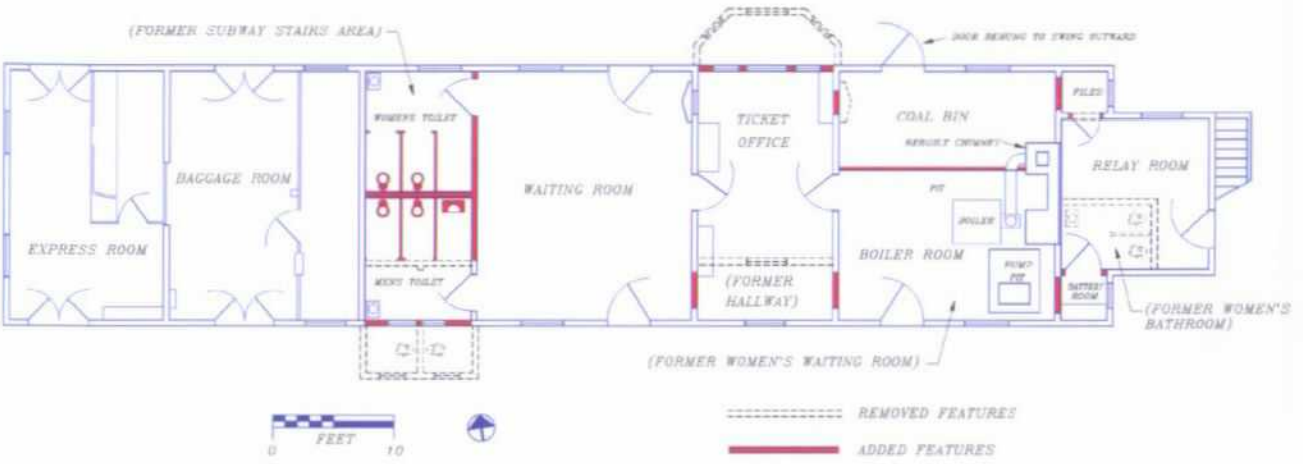


Fig. III-40. Floor plan indicating 1930-31 alterations to the station. (drawing by John Ravenhorst.)

The adaptive reuse of the women's waiting room for this new function led to several other changes in the station's floor plan. The hallway that connected the two waiting rooms was blocked off and this space was added to the ticket agent's office. The ticket office's bay window was removed and the wall was then rebuilt in line with the side of the building. The existing three windows were reset and the new section of wall was covered with matching clapboard siding. The ticket-selling counter and window that had opened into the women's waiting room, now the boiler room, were also removed. Once the station reopened at its new site, there would be only one passenger waiting room.

No longer separated by gender, men and women would now wait for their trains together in the waiting room formerly designated for men's use only. This change necessitated the relocation of the women's bathroom. It was moved from the lower story of the tower to a more convenient space adjacent to the new waiting room, occupying the space where the stairwell to the old subway previously had been. A new partition was put up between the new women's bathroom and the baggage room and obscured glass was hung in the bathroom window. At the bathroom's former location in the tower, a small corner of the space was converted for use as a "battery room."

The men's bathroom, too, was altered before the station reopened at its new site. The room remained the same size, but the projecting bay section was removed and the space, in essence, was shifted back into the building. The room's two windows were reset and new partitions were built to separate it from the new women's bathroom and the waiting room. The dormer above the men's bathroom with its three decorative mesh-guarded windows was also removed at this time and the slate roof was patched.

Finally, by April 15, 1931, the alterations were completed and the station was ready to be transported to its new location.[61] As a crowd of curious onlookers gathered, the station was carefully lifted onto the old main line rails and hauled by a steam crane towards its new home (Fig. III-41). Once there, the station was lifted with its cribbing and put into place. The timbers that made up the cribbing functioned as the foundation and were set resting directly on the surface of the fill.



Fig. III-41. Hauling the station to its new location, 1931. Notice the chimney and south dormer were removed prior to the move. (NPS photo.)

After the move, a few finishing touches were made to the station. These changes were primarily related to the building's heating, plumbing, and drainage systems. Throughout the station, all new joists and flooring were added after water supply and drainage lines were installed. The station's main outlet for drainage was a 166' long, 2' in diameter terra cotta pipe that discharged directly into the river. Numerous radiators throughout the station were moved from one location to another.

The women's waiting room-boiler room conversion was also among the tasks completed after the station was moved. A partition was added to divide the boiler room into two spaces. One of the spaces served as a coal storage bin. Coal was stored in a sunken pit with a dirt floor. The rest of the boiler room space was devoted to the heating equipment. A 5' deep pit was dug and lined with concrete to house the boiler and heating pump. A new water tank was placed above the ceiling of the signal tower and a vent pipe was put through the roof. A smaller, square brick chimney replaced the

[61] *Spirit of Jefferson*, 15 April 1931, p6c1.

original chimney. The following fall, in October 1932, a new furnace was installed.[62]

The Decline of the Railroads

Beginning almost immediately after it was moved, the newly relocated railroad station at Harpers Ferry began a slow, almost imperceptible decline. It was a decline caused by neglect that fully mirrored the health of the B&O Railroad Company and the entire railroad industry. The seeds for the decline had been planted years earlier during the first few decades of the twentieth century. Several factors contributed to the difficulties experienced by the railroads in that era. One cause was an increase in governmental regulations. The railroads suffered as the authority of the Interstate Commerce Commission expanded. A more critical threat to the vitality of the industry, however, was the birth of two competitive modes of transportation that would ultimately be the undoing of the railroads—airplanes and automobiles.

In 1903 Wilbur and Orville Wright made the first successful sustained powered flights in a heavier-than-air machine, thereby ushering in the age of flight. Of greater and more immediate concern to railroad business was the development of the automobile. By 1917 Henry Ford was selling nearly a half million cars and trucks per year.[63] Seen at first as little more than a rich man's toy, the automobile was slow to catch on. Besides, there were very few good roads and intercity highways were virtually non-existent. It would take several more decades for automobiles and airplanes to really challenge the railroads as carriers of passengers and cargo, but the day was coming.

As the infrastructure to support automobiles continued to develop in the 1920s and 1930s, there was a corresponding drop in rail passenger traffic. During the 1920s, the number of cars and trucks had increased from 8 million to 23 million, and many small intercity buses had started to provide service over a growing highway system.[64] With the emergence of the private automobile, decent roads, and motorbuses, passengers began to favor the car over the train, especially for traveling short distances. As a result, the railroad's passenger revenue shrank. The phrase "hitting the road" was no longer synonymous with catching a train.

"The passenger problem," as the decline in passenger train usage came to be called in the late 1920s, became more acute in the 1930s. As America entered fully into the Great Depression, the

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[62] *Spirit of Jefferson*, 12 October 1932, p1c2.
[63] Stover, *History of the Baltimore and Ohio Railroad*, 205.
[64] Stover, *History of the Baltimore and Ohio Railroad*, 270.



Fig. III-42. 1940s views of the station, ca. 1945. (Henry Freeman collection.)



Fig. III-43. Workmen riding the rails, 1940. (NPS photo.)



Fig. III-44. Waiting shelter, 1942. (NPS photo.)

decline of the railroads accelerated. The B&O continued to lose passengers and freight to the highway. Its passenger revenue declined during the decade from $18.5 million in 1930 to $10.6 million in 1940.[65] With less and less capital on hand to devote to its passenger facilities, the once-proud railroad stations slowly lost their luster. As automobiles and roads continued to appear across the land, railroad stations such as the one at Harpers Ferry, lost their dominant position in the transportation landscape. The "golden age" of railroading was fading from the American scene.

Railroad executives tried in vain to counter the steep decline in passenger train usage. One solution in that era was to replace a steam train with a gas-electric motor car, which was less expensive to operate, and to reduce the number of main-line locals and branch trains. Fewer trains were operated on marginal or money-losing services.[66] At the same time, in order to lure the public back to the rails, the railroads introduced innovative concepts in train travel. For example, in 1930 the B&O introduced trains with reclining seats and air-conditioned dining cars. By 1931 it operated the first completely air-conditioned passenger train. Later in the decade, a stewardess/nurse service was inaugurated to look after the comforts of passengers. Faster and faster classes of trains were also introduced to the B&O lines.[67] Though these advancements were well received, the erosion of the B&O's passenger services and facilities continued their slow but steady decline. According to one account, during the bleakest of times, traffic on the B&O line past Harpers Ferry station dropped to as low as six trains per day.[68]

America's entrance into World War II provided a brief but welcome interruption to the B&O's downward financial trend. The war brought an upswing to the American economy that lifted the nation out of the Depression and provided a much-needed spark to the railroad industry. Though the industry prospered as a whole, it was an especially beneficial time for the B&O and Harpers Ferry in particular (Figure 42a, b & c). The railroads played a key role in transporting vast quantities of men and materials for the war effort. It has been estimated that over the course of World War II, special troop trains carried 43.7 million members of the armed forces, or an average of nearly 1 million men per month.[69] Even with this great upsurge in wartime passenger traffic, freight traffic continued to be the basic economic mainstay of the B&O. The freight traffic during the war consisted of the usual civilian peacetime shipments as well

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[65] Stover, *History of the Baltimore and Ohio Railroad*, 290-91.
[66] Charles W. Turner, *Chessie's Road.* (Revised 2nd edition, 1993, The Chesapeake & Ohio Historical Society, Inc., Alderson, West Virginia, 1956), 200.
[67] Stover, *History of the Baltimore and Ohio Railroad*, 287.
[68] Harwood, *Impossible Challenge*, 169.
[69] Stover, *History of the Baltimore and Ohio Railroad*, 310.

as a mix of wartime munitions, equipment, and shipbuilding materials.

The versatility of the railroad as a mode of transportation was highlighted during the war. Huge amounts of oil and coal and nearly all troops were carried by America's railroads. Other means of shipping these goods were negatively affected by wartime circumstances. Shipment by trucks over highways, for example, declined because of a scarcity of tires and shortages of gasoline. Normal coastal shipping lanes were also affected by the war. As German U-boats disrupted tanker traffic from the Gulf Coast to the east, the railroad came to the rescue by diverting immense quantities of petroleum products overland.[70] Rail deliveries of oil from the southwestern oilfields to the east coast refineries surged from 11,250 barrels per day to more than 1 million barrels per day (Fig. III-43).[71]

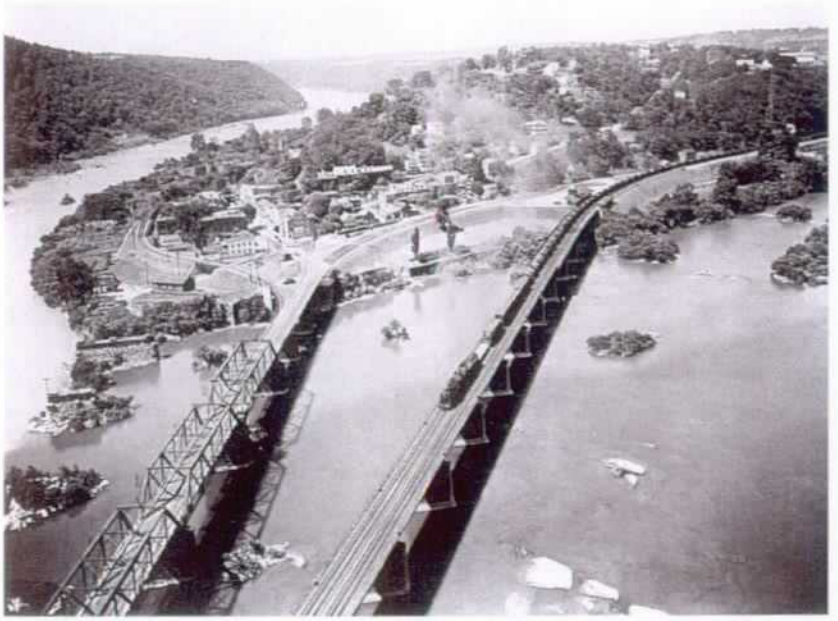


Fig. III-45. Tank cars passing the station in 1942. Railroad activity dramatically increased at Harpers Ferry during World War II as huge amounts of materials and men moved over the line. (NPS photo.)

Because of its position along the B&O's main line, Harpers Ferry benefited from the wartime prosperity enjoyed by the B&O Railroad. Railroading activities at Harpers Ferry were infused with a vitality not seen for years. From an average of about twenty trains a day in 1940, traffic at the station rose to forty-two by the midpoint of the war.[72] This formerly depressed section of the main line was brought back to life as export merchandise, military supplies, and troop movements flooded the line on its way to Washington, Baltimore,

[70] Hollis and Roberts, *East End*, 30; Harwood, *Impossible Challenge*, 173.
[71] Stover, *History of the Baltimore and Ohio Railroad*, 312.
[72] Harwood, *Impossible Challenge*, 173.

and other east coast ports. The demand for coal skyrocketed and the trains rumbled by day and night on their overland route to the industrial cities of the northeast. All the bustle made a lasting impression on one longtime Harpers Ferry resident. He recalls sitting on some nearby rocks and watching the wartime traffic pass. The trains were "constant" and laden with coal, tanks, and other weaponry. The nearby rail yard at Brunswick, he recalls, was jammed with train cars filled up with these things, all of which "was quite a sight for locals."[73]

Corporate Mergers, Modernization, and the Removal of the Station's Tower

The prosperity of the war years allowed the B&O to pay off a substantial share of its pre-war, Depression-era debt. But the postwar years were characterized by another decline in revenue, owing largely to another drop-off in passenger service. As revenues declined and truck traffic increased, once again the B&O faced mounting financial difficulties. Many of the other railroads in the eastern United States were declaring bankruptcy and proposing mergers.[74] B&O officials believed that only through consolidation could the decline of the eastern railroads be halted. And whereas federal regulators once opposed the idea on grounds of monopolies, by the 1950s the ICC took notice of the sharp and increasing competition from other modes of transportation and allowed the mergers to begin. The Chesapeake and Ohio Railroad (C&O), one of the dominant players of the scene, wanted to acquire the B&O.

Although talks to unite C&O with B&O had begun in 1958, the merger was not completed and approved until January 1963.[75] The combined C&O-B&O system controlled 11,000 miles of track. The following year, in June 1964, C&O-B&O took control of the Western Maryland Railroad. Together, the three merger partners controlled a large share of the east's great coalfields. Passenger traffic on the new family of railroads, however, continued its decline. Though the three companies initially retained their full corporate identities, slowly various departments of the lines began to consolidate into a unified whole. By the early 1970s the transition to one company was complete. Company executives decided it was time for a new image and in 1972 a holding company called the "Chessie System" was created.

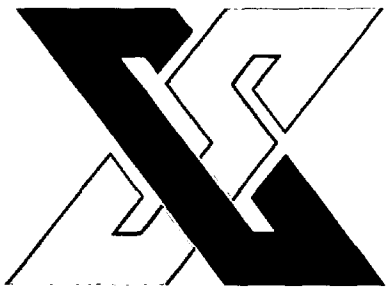


Fig. III-46. CSX logo. (CSX Corporation)

By 1980 the Chessie System railroads would themselves be subsumed in a series of mega-mergers that resulted in the formation of the giant CSX Corporation (Fig. III-44). The company quickly

[73] Jay Mauzy, personal communication, July 2002.
[74] Turner, *Chessie's Road*, 191.
[75] Turner, *Chessie's Road*, 194.

branched out into other modes of transportation including sea, air, barge and highway, and in 1986 formed CSX Transportation (CSXT) with its headquarters in Jacksonville, Florida.

Throughout the merger process, the C&O pumped enormous amounts of money, supplies, and equipment into the B&O to help bring its deferred maintenance and antiquated equipment up to date. A committee was set up to consider what parts of the system were duplicative, unproductive, or otherwise a drain on company resources. This process, which the B&O had already begun in the early 1950s, led to physical facilities reductions and service abandonments. These changes had a dramatic impact on the appearance of the B&O's old main line and the station at Harpers Ferry. First, the company tore down all structures it deemed unnecessary. Next, unprofitable passenger services were cancelled. Though the Harpers Ferry station was spared the wrecking ball, many of the region's other stations were not. For example, in 1950 virtually all of the company's frame way stations and passenger shelters between Baltimore and Point of Rocks, Maryland were completely dismantled.[76]

The appearance of the station at Harpers Ferry did change dramatically, however, when it lost its interlock tower. On February 3, 1950, the interlocking controls were moved from the tower to the agent's office. The tower itself was dismantled between August 1950 and March 1951.[77] The removal of the interlocking tower was a typical end result in the railroad's usage of technological developments. Advancements in technology rendered the tower obsolete and it was removed. With the second floor of the two-story tower gone and the subsequent remodeling of that section of the roof, the station looked much as it does today (Fig. III-45). It did not fully achieve its current configuration, however, until the building's north dormer was removed. Photographic evidence suggests this was done sometime after 1958 but before the mid-1970s.



Fig. III-47. The station as it appeared in the late 1950s, not long after the interlock tower was removed. (B&O Railroad Museum.)

During recent decades, other advances in technology have affected modern railroading operations at the Harpers Ferry station. High

[76] Harwood, *Impossible Challenge*, 174.
[77] Hollis and Roberts, *East End*, 34.

tech innovations such as radio communications, sophisticated computer systems, and geo-locational tracking devices have all allowed dispatchers to control train movements remotely. On November 5, 1986, the train order and switching functions at Harpers Ferry were removed to nearby Brunswick, Maryland thereby ending the long history of the individual agent/operator at the station.[78] Even the days of the Chief Dispatcher on each division of the railroad are coming to an end as evolving technologies allow the CSX central dispatching center at Jacksonville, Florida to assume more efficient control from a distant location.

Recent History and Conclusions

As has been noted, steadily declining passenger revenues prompted the railroad to cut or scale back services. In 1953 alone, the B&O discontinued nine passenger trains.[79] As the huge highway building program launched during the Eisenhower administration gained momentum, each year saw additional passenger services cut. By 1970 there was a growing public concern over the disappearance of passenger trains throughout the country—down alarmingly from 20,000 intercity trains in 1929 to only 500 in 1970.[80] In response to the public concern, in October 1970, Congress passed legislation that created the National Railroad Passenger Corporation, better known as Amtrak. Amtrak's passenger services commenced operation on May 1, 1971 and established a limited national rail network. The Harpers Ferry station currently provides daily passenger service on Amtrak's Capitol Limited line between Washington and Chicago.

Around the same time as Amtrak's formation, there was a surprising renaissance in the daily commuter business. Construction of Interstate 270 in Maryland encouraged suburban growth to the north and west of Washington, D.C. As the suburbs expanded and the area's population increased during the 1970s and 1980s, the Maryland Department of Transportation (MDOT) began subsidization of commuter service on the old B&O lines. This allowed residents of the region easy access to points in and around the Baltimore-Washington metropolitan area. The service, now operated by CSXT, was officially named the Maryland Rail Commuter (MARC) Train Service in 1983. Under a lease agreement, MARC commuter services were extended into West Virginia as far west as Martinsburg. The Harpers Ferry depot currently provides weekday commuter service on MARC's Brunswick line.

The fact that the Harpers Ferry station remained in active use while other stations in the region were abandoned, did not exempt it from

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[78] Rob Brzostowski, "Harpers Ferry Station to be Restored." (*Bull Sheet* newsletter), 3.
[79] Stover, *History of the Baltimore and Ohio Railroad*, 351.
[80] Stover, *History of the Baltimore and Ohio Railroad*, 368.

falling into disrepair. Indeed, conditions had deteriorated to the point that in 1999 the National Trust for Historic Preservation and the Great American Station Foundation named the station one of the "Top 10 Most Endangered Stations in America" (Fig. III-46).



Fig. III-48. Preservationists put the station on an "endangered" list in 1999. The condition of the station can be seen in these views of the interior. Parts of the station had deteriorated from disuse and neglect. (photos by John W. Ravenhorst.)

The list was designed to highlight historic stations that were in danger of losing their capacity to operate as rail stations due to imminent demolition, destruction by neglect, or plans to terminate station operations. The nomination for the Harpers Ferry station states that "the former B&O Railroad Depot has fallen into disrepair and today faces an endangered future...A revitalized depot," it continues, "can serve as a welcoming front door to the popular community of Harper's Ferry and encourage individuals, families, and groups to use rail service as an easy, safe, and efficient way to visit this historic attraction."[81]

While the endangered designation may have helped foster public dialogue about the future of the station, at the time of the listing the National Park Service (NPS) had been negotiating the ownership of the building with CSX for quite some time. In an on-again-off-again deal that took almost four decades to negotiate, CSX and NPS finally reached an agreement in September 2001. The NPS had long been aware of the station's potential as a gateway for visitors to Harpers Ferry National Historical Park. The idea that the NPS could acquire the station was first proposed in Congress in 1960, but negotiations did not begin in earnest until about twenty years ago. Negotiations intensified more recently with West Virginia Senator Robert Byrd's involvement. The final agreement was a trade that transferred the station and five acres of the former armory grounds in exchange for property in Cumberland, Maryland.[82]

In a press release, Senator Byrd said, "This property is vitally important to both the history of the region and to the local economy. After decades of negotiation, the land transfer will allow community

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[81] Great American Station Foundation, Endangered Stations Archive, 1999 Winners, Harpers Ferry, West Virginia, Baltimore and Ohio Railroad Station, www.stationfoundation.org, accessed 2 December 2002.

[82] For details of the transaction see: Brad Pierce, "Park Service Takes Control of U.S. Armory Grounds." Martinsburg Journal and Andrew Schotz, "Park Service Gets Train Station." Morning Herald. (both 26 September 2001).

leaders, working in conjunction with the National Park Service, to rehabilitate the historic B&O train station."[83] In the summer of 2002, the Historic American Engineering Record (HAER) recorded the existing conditions at the Harpers Ferry station. Measured drawings and photographs were completed as part of HAER's mission to document historically significant engineering and industrial works in the United States. With regards to the future use of the building, Park Service officials are working on a cooperative agreement with both the Town of Harpers Ferry and CSX Corporation. The NPS has pledged to continue to support Amtrak and MARC operations during the restoration process.

[83] As quoted in Schotz, "Park Service Gets Train Station." *Morning Herald*, 26 September 2001.

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Chronology of Development & Use

Chronological Summary of Development and Use

1894 Station constructed; designed by architect E. Francis Baldwin. Wood was painted a "pink-brown" color with the trim a darker color, varnished.

1898 Westbound waiting shelter constructed. All depot buildings repainted a cream color, with the doors retaining a dark color, varnished.

1900 New interlocking functions installed in tower. Exterior stairs to tower probably added at this time.

1910 Westbound waiting shelter enlarged with 20' addition. Paving (brick) and curbing (stone) installed around depot.

1913 Subway to westbound waiting shelter constructed. Access to subway by stairwell added to men's waiting room. Construction of stairs required a new partition between men's waiting room and baggage room. Baggage Room open wall introduced. Iron fences erected between tracks and around depot grounds. Forty-four "electrical lamps" added at depot and grounds.

1915 Station repainted a shade of mint-green, with gray-green accents for trim.

1916 Express room partitioned when express agent's office is moved into station.

1923 Station repainted a shade of dark moss, with lighter sage-green accents for trim.

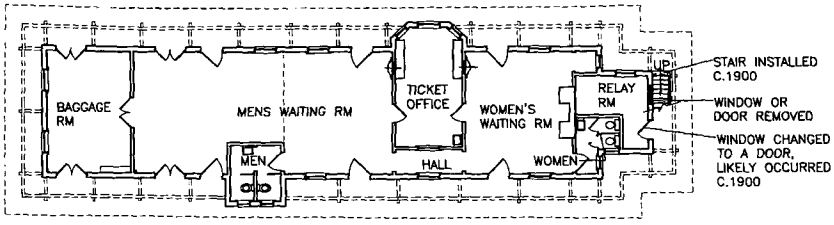
1925 New hot water furnace installed.

1929 Interior of station painted shades of cream and tan.

1930-31 Chimney and south dormer removed. Subway stairs closed off. Bay windows of men's toilet room (south facade) and ticket office (north facade) removed. Women's toilet room relocated to subway stairs area. Women's waiting room partitioned and converted to boiler room and coal bin. Hall connecting waiting rooms blocked off and incorporated into ticket office. Numerous heating, plumbing, and drainage changes.

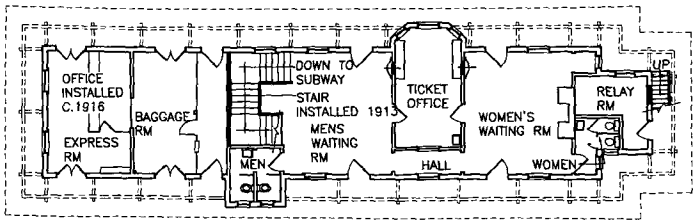
1931	Station and waiting shelter relocated to present site. Construction of new subway and subway covering shed. Iron fence erected between tracks. Smaller chimney rebuilt. Station, subway enclosure, and shelter building all painted the "traditional" B&O colors of red-brown field with dark-brown accents for trim.
1932	New furnace installed.
1950	Interlock tower removed.
1958-ca. 1975	North dormer removed.
ca. 1986	Station sandblasted.
1986	Interlock controls removed to Brunswick, Maryland.
1999	Great American Station Foundation and the National Trust for Historic Preservation named Harpers Ferry train station one of the "Top 10 Most Endangered Stations in America."
2001	NPS acquired train station and former armory grounds site from CSX Corporation.
2002	Historic American Engineering Record documented existing conditions.
2003	Denver Service Center of the NPS oversees hazmat abatement project within the station, which removed the majority of the flooring material and subfloors.

Period One: 1894-1912



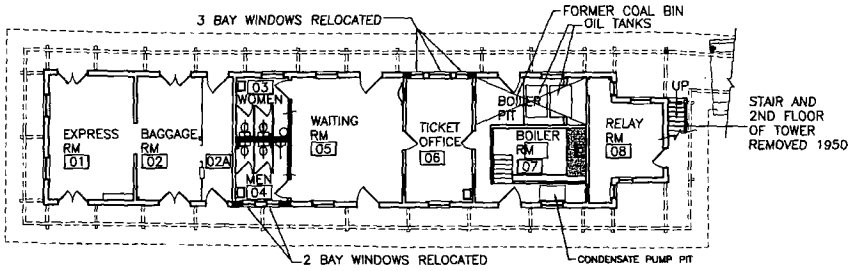
OUTSIDE STAIR INSTALLED C1900 (door to switch room likely installed at that time in what was a window.
1894–1913

Period Two: 1913-1930

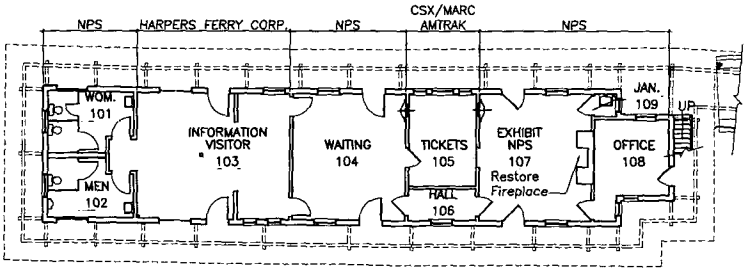


EXPRESS COUNTER INSTALLED 1916

Period Three: 1931-Present



Proposed Renovations: 2004



Alternate D in Section VII Alternatives to Treatment

Chronology Drawings developed by Paul Newman, Denver Service Center, 2003.



Fig. IV-1. Station seen from the east, c1895. HFNHP Photo.



Fig. IV-2. West side clipped hip. B&O Museum photo, no. 2, 1931.

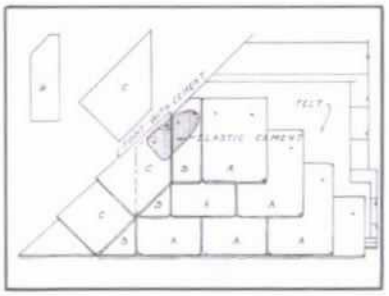


Fig. IV-3. Detail of how the edge of a Boston Hip slate roof is constructed. Drawing courtesy National Slate Association.



Fig. IV-4. Station from the east, pre-1913. HFNHP photo.

Period One: 1894-1912

The Harpers Ferry Train Station for the B&O Railroad was completed in the Fall of 1894, designed as a waiting area for passengers and as a freight shipping and receiving facility. The original one-story building stood approximately 101'-7" long by 21'-7" wide. The long north side of the building (plan north—this building side actually faced slightly northwest) was oriented toward the platform, paralleling the tracks. The main footprint of the building was a simple rectangle 93'-2" long by 21'-7" wide. Three plan projections enhanced the simple rectangular form: two side bays and an end tower. On the south side, a rectangular bay approximately 9'-9" wide (forming part of the men's bathroom) projected out from the building by approximately 4'-6"; on the north side, a trapezoidal bay at the ticket office projected out approximately the same distance. A two-story tower, approximately 13'-7" square, projected into the east end of the building footprint to a depth of 5'-2" (see Fig. IV-1).

Roof

The simple gable roof over the main rectangle transitioned to a "clipped" hip on the west side, creating space for a wood ventilation louver. The upper two sides of this opening were trimmed with slate (Fig. IV-2). On all sides, the roof extended out approximately 6' beyond the face of the building, creating a covered canopy supported by carved wood brackets. The roof canopy continued around the three exposed sides of the tower at the second floor line and merged with the partial hip of the main volumetric form with slopes that matched. Two dormers, each roofed with a hipped-gable, were probably used for ventilation. One dormer on the south side, over the men's room, had a front face in line with the outer wall of the projecting bay below. The peak of this dormer's gable intersected the main roof approximately half way up the slope. The other dormer on the north side was located above the ticket office, but was set back from the roof edge, with the dormer front face in line with the main building face. The peak of this dormer's gable intersected the peak of the building's main gable. The tower was capped with a pyramidal roof form of steeper slope than that used on the main building, and capped with a metal finial. All roofs were covered with slate, with the "Boston hip" detail employed at intersections (Fig. IV-3). Roof ridges appear to have terminated with a rolled metal closure cap, and open valleys were flashed with metal.

Pole Gutters and Downspouts

Built-in wood gutters ran at the perimeter of the roof overhangs. Wood struts positioned over the centerline of the bracket locations supported a wood board, approximately 1" by 10", set at a reverse angle to the roof slope. Additional struts were added to make their ultimate spacing approximately 2' on center (Fig. IV-4). The first course of slate was held back from the gutter, which was lined with felts and probably covered with sheet metal. Slopes inside the

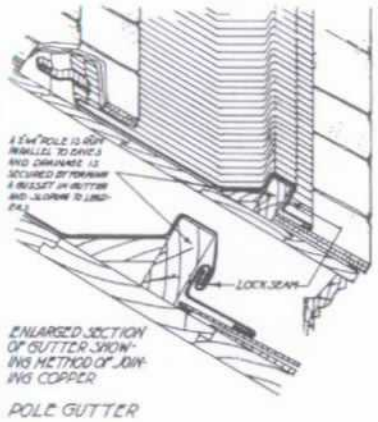


Fig. IV-4a. Detail of typical "pole gutter," installed within a slate roof, taken from Hilltop Slate Installation Handbook, 1948.



Fig. IV-5. Station from the east, c1910. HFNHP photo-489.

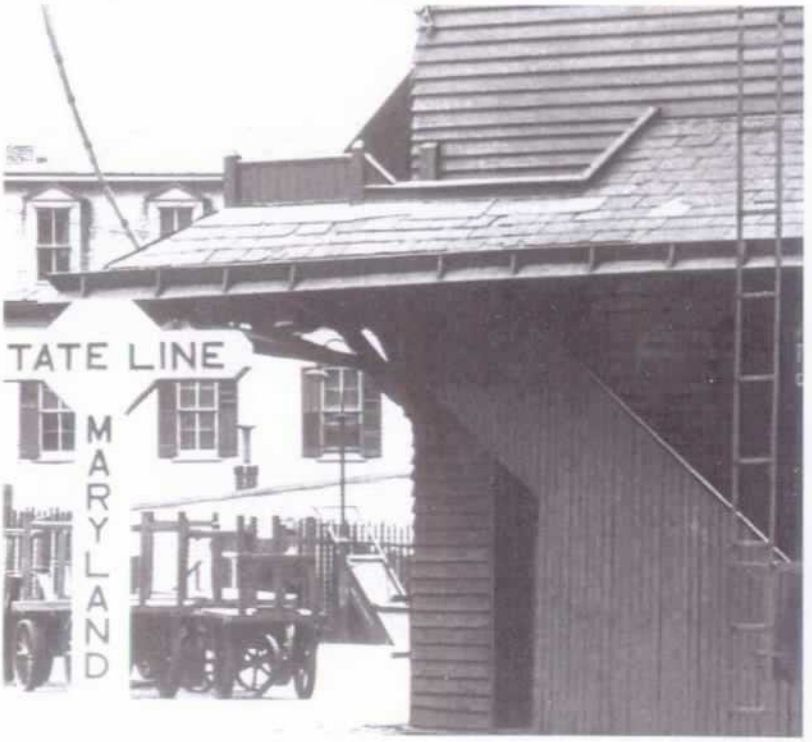


Fig. IV-6. Southeast corner of the station, ca 11 Nov. 1930. B&O photo-6.

gutter were probably achieved by building up the gutter bottom with shims placed away from the downspout locations. Six downspout locations were arranged symmetrically in pairs about the long axis of the building: two on the north and south faces of the tower, set back approximately one foot from the east side; two near the center of the north and south faces of the main building, and two on the west end, each set in from the corners by approximately one foot. Round downspouts transitioned into cast-iron collector boxes that were approximately 6" square and 4'-6" high. As seen from early photographs, the tower was originally built with no perimeter roof guttering system.

Tower

The tower stood two stories high, with three, six-over-six double-hung windows on three of the four sides of the second level (Fig. IV-5). The south side of the tower held a central brick chimney, with a strongly corbelled top. One six-over-six double-hung window flanked each side of the chimney. As originally built, none of the windows had exterior shading devices. A pronounced sill line below the windows wrapped the edge of the tower. Flat exterior trim boards separated the windows above this sill. The walls below the sill line were clad with a horizontal siding with 4-1/2" exposure (Figs. IV-5-8). It remains unclear whether the tower interior originally had a second floor. No evidence of an interior stair or ladder has been uncovered. The 1931 B&O drawings do show some lines in the second floor plan that could either be remnants of a floor opening, or perhaps a pad for equipment.



Fig. IV-7. South side of station tower, c1915. HFNHP photo.

South Exterior Stairs

In c1900, an exterior stairway was added to the east and south sides of the tower to provide access to the second level of the tower. The stairs are seen in several early photographs. In one, the start of the exterior stair railing is visible with vertical beaded board, and square newel post (Fig. IV-5). The start of the railing appears to align with the east corner of the building. Any arrangement of a railing system on the side of the stair against the building is not visible. As the stair rose and turned the east corner of the tower, the lower roof had to be cut and adjusted to allow for the passage. The opening is edged with a sloped rake board the projects above the roof and forms a curb (Fig. IV-6). The vertical projection above the roof plane appears to be the dimension of one line of siding, approximately 4-1/2".

On the east side of the opening, the railing aligns with this edge board, and rises from it. The railing surrounding the upper run to the 2nd floor is solid, butted vertical board (potentially beaded board) capped by a slightly projecting wood handrail and carried by a sill board that spans between support posts (Fig. IV-7). This railing was changed in 1931 to an open variety.

The outside entry at the second level necessitated the conversion of one window opening to a door opening. This was achieved at the western most opening on the south side (Fig. IV-8). A three-light transom panel that aligned with the top of the adjacent windows headed the opening. The door, below this transom, was of stile-and-rail wood construction, with a two-over-two glass upper panel positioned above two lower horizontal-oriented wood panels. The horizontal muntin in the glass lights aligned with the horizontal muntins of the adjacent windows.

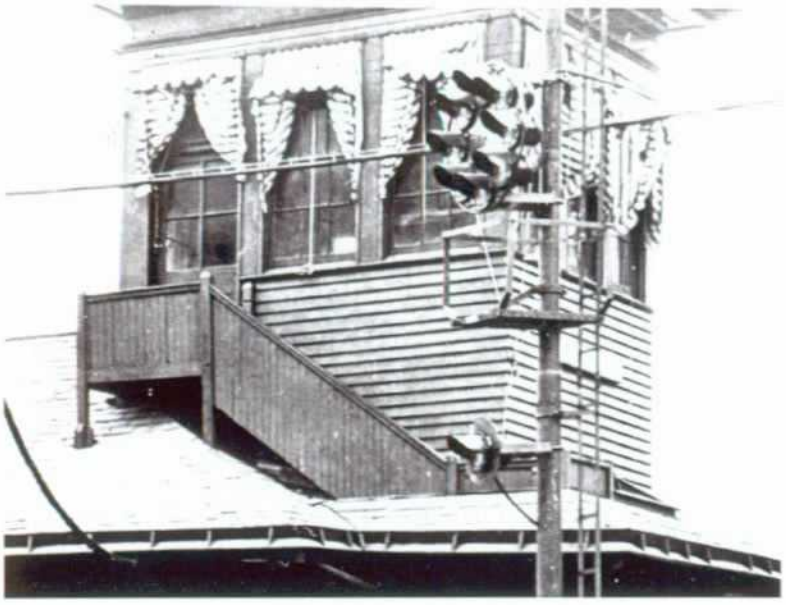


Fig. IV-8. HFNHP Photo, c1915.



Fig. IV-9. Station from the southwest, c1915. HFNHP photo.



Fig. IV-10. Examples of both types of double-hung window are seen. These windows at the Ticket Office were originally part of the projecting bay, which was removed during the 1931 building relocation. Window sash and frames were reinstalled in the reconstructed flat plane of the replacement wall. HFNHP HAER Photo, 2003.

The stair positioning caused the elimination of a first-level door opening on the east side, and the conversion of an adjacent window to a door. Remnants of patches in the siding remain. The semaphore signaling device, probably added at the same time as the exterior stairway, is seen attached to the north face of the tower, at the north corner, immediately above the lower roofline. Awnings for the tower windows and door were probably added c1900, at the time the second floor of the tower was occupied for signaling responsibilities. Awnings are clearly visible in photographs by c1915.

Tower Guttering Modifications

A metal pole snow-guard system with four bracket mounts per side, and a perimeter, half-round gutter system on the east and south sides were probably added c1900 to keep water off the stairs, and certainly appear in 1913 photographs. A downspout from the tower gutter is shown clearly in a c1915 photograph (Fig. IV-9). It is mounted at the west corner, drops to the lower roof level, and terminates with a small boot. The water then runs along the roof, with a fanning water stain clearly visible. The opposite side of the chimney, on the west, appears to have had neither gutter nor downspout, since the tower roof water affected nothing below.

Station Exterior

The exterior of the station was sided with the same horizontal siding used on the lower portion of the tower. Double-hung windows were of two varieties: six-over-two wider units, and four-over-one narrower units (Fig. IV-10). Vertical muntins in the wider unit did not align—upper to lower sash—an idiosyncrasy seldom seen in window design and detailing. Exterior doors were typically stile and rail wood units, with two horizontal wood panels below the hardware line. Two upper vertical panels were either of wood or glass, depending upon the door location (see below).

Early Exterior Paint Colors

Exterior colors for the station during this early period changed several times, and have been identified in the preliminary findings of the analysis of the historic paint colors (see Appendix F.) The original construction had a "pink-brown" varnished finish applied to the clapboards, window frames, door frames, transoms and roof rakes. A darker, accent varnish was used on the doors, roof brackets, rafters, and bead board ceilings. In the repainting that occurred in 1898, a cream color was applied to all the painted surfaces, except the doors, which retained their dark varnished finish color.

Original Interior

The interior layout of the station is shown in the floor plan for Period One: 1894-1912. A ticket office with a bay window—allowing visual observation of the tracks—separated a men's and women's waiting area. Separate doors allowed access into each of the waiting rooms

from the south, city side of the station, and another pair provided egress from the waiting areas out to the station platform on the north. These doors had upper solid wood panels. Three-light transom panels surmounted the doors.

The ceilings of the waiting rooms were vaulted forming a gambrel profile, with a portion of the wood roof structure visible (Fig. IV-11).



Fig. IV-11. Right: Original Women's Waiting Room. Ghost lines of the position of the original cornice are visible. Patched areas around original fireplace are also evident. HAER Photo, 2003.

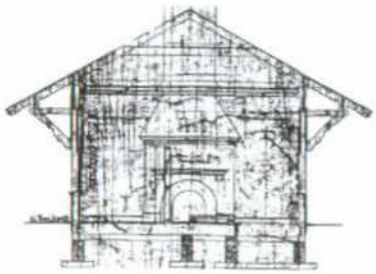


Fig. IV-12. Besides showing changes proposed in conjunction with the building relocation, the drawing shows the configuration of the original fireplace and cornice in the women's waiting area. B&O Drawing 66692, 3-6-1931.

The edges of the beams were slightly chamfered. At the ticket office and hall that separated the two waiting rooms, the ceilings were flat, and dropped to a position of the adjacent rooms' cornice lines. Toward the west end of the men's room, the high ceiling terminated at a bulkhead, with the ceilings flat to the west of this line. Flat ceilings covered the remainder of the men's waiting area, the baggage room, and the express room. The men's toilet room was located in the south projecting bay, and extended into the footprint of the building by approximately 4'-6". This toilet room may have opened up into the dormer area that covered it. Originally the relay room may have opened up for the full height of the tower area. Originally both a window and door were located on the east side of the relay room; the window was eliminated and the space covered over with wood siding when the exterior stair was introduced in c1900. By that same time, when the signaling changes occurred, a second floor did exist in the tower, accessed by the exterior stairs.



Fig. IV-12a. Current detail at north west side of alcove original to the women's waiting room, showing remnants of the original cased opening with portions of chair rail. removed. GWWO photo, 2004.

Walls and ceilings were typically covered with a variable-width beaded board. On the walls, the bead ran vertically throughout the spaces. A large fireplace flanked the east wall of the woman's waiting room (Fig. IV-12). An alcove located northeast of the fireplace may have had a cased opening enclosure, with the chair rail continuing throughout. (Fig. IV-12a).

A 4,000-gallon tank may have occupied space in the attic over the baggage room. There is a beam and a central supporting column in the baggage room, the only such structure found throughout the building. A 1919 inventory of the property undertaken by the Interstate Commerce Commission included the following notes: "Tub in Baggage Room / W.P. Staves / W.I. Straps} 4' x 12' diameter / *Similar to Type W.T. 4000 Gals / Open Top / Supported on flooring." The 1931 B&O relocation drawings call for the tank's removal. No physical evidence of the tank has been found, although the ceiling cornice in the baggage room space is different from that found throughout the rest of the building (see Physical Description). This ceiling may have been modified during the tank removal.

Period Two: 1913-1930



Fig. IV-13. B&O Drawing, appearing in B&O Magazine, *1912, showing the proposed subway planned for installation under the railroad tracks at the Harpers Ferry and Wilmington stations.*

The first substantial interior alteration to the station occurred in 1913, when the B&O decided to construct a tunnel under the train tracks in order to allow passengers to reach the opposite side of the tracks in a safe fashion (Fig. IV-13). The stairs descended down from the north side of the men's waiting area, in the floor area adjacent to and outside the men's room. The floor in this area was removed. A partition between the men's waiting room and the baggage room was constructed of beaded board that had a different, more uniform width than that originally used in the station. The open wall within the Baggage Room was also added. A second door may have been added to the men's room at this time, to allow the workmen in the Baggage and Express rooms to have access to the restroom without having to exit the station. (This opening is not currently shown on the plans. The B&O plans of 1931 do not show this opening, but the current field conditions in both the Men's Room and the Baggage Room indicate that some modifications took place in this area at some time.)



Fig. IV-13a,b. Site lighting prior to and after the station relocation. Left: HFNHP Photo, c1931. Site adjacent to train station prior to the move. Right: B&O Photo, c1931. Site southeast to relocated station. Site lighting fixtures used in both instances were similar, perhaps identical. B&O may have relocated existing fixtures.

Site improvements in 1913 included wrought iron fencing placed between the sets of tracks, and around the grounds. Forty-four "electrical lamps" were installed at the depot and on the adjacent grounds. Pre-relocation photographs show site lamps and poles (Fig. IV-13a) with a design similar to those installed later at the new site.

In c1915, the station was repainted. A mint green color covered the earlier cream color on the clapboards, window frames, sash, door frames and sills. A gray-green accent color was used on the doors and roof brackets. Roof rafters had a dark varnish. In c1923, a new paint scheme was introduced. A dark moss color covered the clapboards, window frames, sash, sills, door frames, and door stiles and rails. A lighter sage green accent color was used in the door panels. The roof brackets, plates, rafters and soffits were the same dark moss color as the clapboards.

Period Three: 1931-present

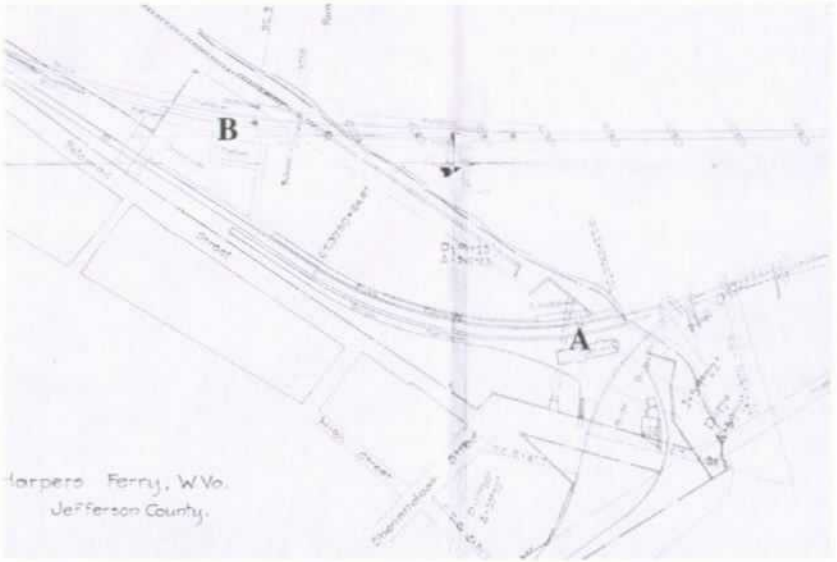


Fig. IV-14. B&O Site Drawing, c1930 showing the existing and the proposed sites for the train station. The original site is shown at "A" and the proposed site is shown at "B."



Fig. IV-15. View of the station from the southwest showing conditions after relocation and prior to final completion of the renovation work. The new chimney is not yet built. The repairs needed after the removal of the men's toilet room bay and dormer are not complete. B&O Photograph 130, dated 6-9-1931,

Due to railroad track realignment at Harpers Ferry, and in conjunction with the construction of a new bridge across the Potomac River, the passenger station required relocation (Fig. IV-14). Some work on the building was performed prior to the move, and some final work completed following the move (Fig. IV-15). B&O drawings dated March 6, 1931 detail both the alterations to the station that were undertaken prior to the move, as well as the structural elements required for the move itself. The major changes to the building are summarized here.

Building Exterior

The exterior stair providing access to the second floor of the tower was altered. From photographic documentation, it is clear that the railing was changed to an open design, with only the upper landing retaining the original beaded board enclosure (Figs. IV-16 and 17). Square wood supports for landing penetrate the slate roof. The 1931 drawings show this upper landing with an open railing, which was not completed. The upper stair run had a sloping rail with one sloping intermediate, and one vertical intermediate support post. Uprights for the railing are mounted through the treads, and not outboard of the stringer. The lower stair run was probably rebuilt at the new site, rather than being moved with the building. It is seen with an open railing in post-relocation photographs.

A new track cross-under tunnel was constructed east of the new station location. This necessitated the construction of a new shelter to cover the tunnel steps (Fig. IV-17). The enclosure replicated details from the main station building, including the roof slate, perimeter gutter detail, the six-over-two double hung windows, and the horizontal siding. The shelter roof did not align perfectly with that of the main station. The connection necessitated filling in the



Fig. IV-16. Detail from B&O Photo 138, dated 8-13-1931. The upper run of the exterior stair, and the top of the replacement chimney are clearly visible.

northeast corner of the notched station roof. This change mandated extending one of the brackets and installing a column. The southeast corner retained the "notched" roof indent, which was not eliminated until the tower was removed in c1950.

The original chimney from the women's waiting room was shown on the 1931 B&O drawings. Prior to the building's relocation, the chimney was removed. Following relocation (Figs. IV-15 and 18), a new smaller and lower chimney was constructed, with a simpler corbelled line approximately 1'-4" below the top of the chimney.

The ticket office trapezoidal bay, the men's room bay projection, and the dormer over the men's room were removed prior to relocation. The roof was patched with replacement slate and the walls patched with replica siding. The dormer over the ticket office, which was set back from the bay projection, was retained (Fig. IV-17).

Paint analysis has determined that the "traditional B&O red and brown" paint scheme on the building date to this relocation period. A red-brown color (Munsell 7.5R 3/6) was used on the clapboards, on the beaded board of the roof overhang, and on the door panels. A dark brown trim color (Munsell 10R 2/2) was used on the door frames and transoms; door stiles and rails; window frames, sash, and sills; and roof structure including brackets, braces, rafters, plates, and rake boards.

Fig. IV-17 (right). Detail from B&O Photo 139, dated 8-13-1931. The cover to the new tunnel is in the foreground, connected by its roof to the main station. The lower run of the stair at the tower is visible with its open railing. Site lighting & railing designs are visible.





Fig. IV-18. Detail from B&O Photo no. 2, dated 1931. The replacement chimney is complete, with half-round gutter running outboard of the chimney.

Site



Fig. IV-20. View of the relocated station, dated 8-13-1931. The enclosure to the subway tunnel is seen to the right. The newly-constructed wood superstructure had siding that matched that of the station. B&O Photo 138.

The new site for the station received pipe-rail railings flanking the south side of platform, east of the enclosure to the tunnel (Fig. IV-17). Similar railings were used on the opposite side of the tracks (Fig. IV-21). Railings had intermediate pickets where they flanked the platform and in the area adjacent to the west side of the tunnel enclosure. Railings farther south and east, at the top of the graded slope of the site, were of similar pipe and joint detailing, without intermediate pickets (Fig. IV-20). Base mounts for the railings along the platform were cast elements with square base-plates, secured with fastenings at each corner. Plates were mounted directly to platform wood.



Fig. IV-21. Post-1931 photograph showing Station and Westbound Waiting Shelter. See separate discussion for the developmental history of that structure. HFNHP photograph.

Base mounts for the railings along the edge of the hill had round collars with round base-plates, secured with four fasteners per plate. Plates were mounted to the curb, which in some photographs appears to be granite.

A wood plank platform (composed of boards approximately 12" wide) separated the station from the tracks.



Fig. IV-22. Site southeast of the station following relocation. B&O Photo 137, dated 6-09-1931.

Gooseneck lamps, each with a shallow-flared reflector and ball medallion at the base of the neck, were mounted to panel joints of the railing. A pipe extending up to the ball medallion supported each lamp.

At the time immediately after the move, landscaping east and south of the station consisted primarily of grass and low scrub. One deciduous tree sat at the south side of the depression, at the base of the slope. A dense area of low shrubs and two deciduous trees lines the north side of the depressed site east of the station. Foundations of three previous structures were outlined with limestone (Fig. IV-22).

Utility / Drainage Systems

The 1931 Building Relocation drawings contain significant information concerning the status and anticipated operation of the station's drainage system. A 24" T.C. (Terra Cotta) "Main Outlet for Drainage" was located under the floor in the southwest corner of the Passage between the Men's and Women's Waiting Rooms. From this location northward, the pipe ran underground 166 feet, "to River." In the portion under the building, this main was shown under the Ticket Office, running parallel and adjacent to the room's west wall. The exterior roof drains were shown tied together underground at the buildings exterior perimeter with 4" or 6" C.I. (cast iron) piping, depending upon location. On the west side of the building the storm water line began outside at the southwest corner, ran north and then east, and then under the building to the terra cotta "Main Outlet." On the east side of the building the storm water line began at the north side of the Subway Tunnel, ran west and then southward along the west side of the station, turned west and ran along the south side of the station as far as the Passage, and then connected to the terra cotta "Main Outlet." Men's and Women's toilet fixtures were connected to a 4" C.I. (cast iron) sewage line that tapped into the storm water line ahead of its intersection with the "Main Outlet," under the Men's Waiting Room floor.

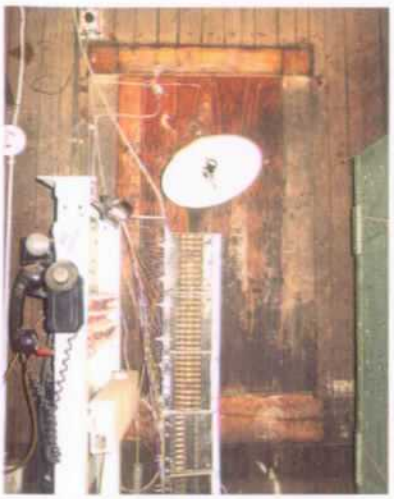


Fig. IV-23. Abandoned ticket window, mechanical room. GWWO photograph, 2004.



Fig. IV-24. Original location for women's toilet room entry, seen from current mechanical room. Portions of the hinge casing are still in place. GWWO photo. 2004.

Building Interiors

The interior adjustments to the station that took place immediately before and after the relocation are highlighted in the Period Three plan drawing.

A major change consisted of the consolidation of the men's and women's waiting rooms into one space, the previous men's waiting room. Because the new subway to the opposite side of the tracks was now located east of the building footprint, the stairs down to the old tunnel could be removed. This area was redesigned to house separate men's and women's toilets. A new beaded board wall was introduced to separate the toilets from the waiting area. The men's toilet room door and casing could be reused in place. The women's toilet room door was probably relocated from its original position off of the women's waiting room. Today that opening is closed up with a beaded board patch, with a piece of the original casing from the hinge side still in its original position. The remainder of the original trim associated with this opening has been removed, probably reused in the 1931 adjustment.

The other major change to the spaces included the conversion of the women's waiting room into a mechanical space. The projecting portions of the chimney were removed prior to the move. The 1931 relocation drawings show the interior fireplace remaining. This element may have been damaged in the move and eliminated shortly thereafter. Because the room's use no longer required the fireplace, it was not replaced. A much smaller chimney (2' by 2') to serve as a boiler flue was provided and built shortly after the move. This chimney sat on timber cribbing where the fireplace used to be located, reinforcing the conjecture that part of the original fireplace may have been moved, and then demolished. The old ticket window was boarded over, but the casing left partially intact (Fig. IV-23). The east alcove off of the old woman's waiting room was closed off, and the space used with the relay room (Fig. IV-24). A lower area in the mechanical room was created to house the boiler itself, as well as to accommodate an adjacent coal storage pit.

Other modifications at the time of the move included the elimination of the south hall that connected the men's and women's waiting rooms. This space became part of the ticket office, and the two hallway openings patched with beaded board. Clear indications of infill board are still observable.

HVAC Systems

The 1931 B&O Relocation drawings contain significant information concerning the status and anticipated operation of the station's heating systems. The existing coal-fired hot-water boiler, apparently used for the station's heating prior to 1931, was relocated with the building and enlarged and converted to steam. "One section added



Fig. IV-25. View of existing furnace and concrete pit, mechanical room (former Women's Waiting Room). Newman photo, 2002.

to boiler with grate bar, shaking bar and base changed to suit. Boiler fitted for steam. Pres. Boiler W-25-6 to be S-25-7." (B&O System Drwg. 16689, dated March 6, 1931, sheet 2 of 5.) The location of this boiler in the building prior to the move is unknown. To date, the assumption has been that the Women's Waiting Room was converted to the Mechanical Room in 1931, following the building relocation (Figs. IV-25 and 26). If this is true, the existing boiler had to be at another location before the move. That earlier location has not been identified, and is not shown in any photographs or drawings.

Radiators that were in the building before the move were refurbished and reused, with the majority being relocated to spaces different from those in which they originally functioned. The Men's Waiting Room retained its two perimeter radiators in their pre-1931 locations, but lost one that had been located on the interior east wall, south of the ticket window. The Women's Waiting Room lost both of its perimeter radiators, the north one was relocated to the north wall of the Ticket Office, and the south one was moved to the second floor of the tower. Most of the piping to the radiators was replaced, with "supply main and branches above Waiting Room ceiling with drop risers to radiators. Return mains under floor. All supply lines above ceiling to be covered with standard thickness asbestical covering." (Note on B&O System Drwg. 16689, dated March 6, 1931, sheet 2 of 5).



Fig. IV-26. View of existing furnace, flue and piping, mechanical room (former Women's Waiting Room). Pendant lighting fixture is still in place. Newman photo, 2002.

Interior Electrical Lighting System

Only minimal drawing documentation exists concerning the building's interior electrical system immediately following the 1931 relocation. However, coupled with the current physical conditions noted elsewhere, the lighting fixture types and locations can be set. Fixtures in the high-ceilinged areas were ceiling-mounted pendants with a shallow, circular metal reflector surrounding an exposed incandescent bulb. Fixtures in the low-ceilinged areas had the same reflectors without pendants. At the ceilings, a cyclindrical-shaped metal closure covered the junction boxes. The Express Room had two ceiling fixtures, one located over the counter, and one centered behind the counter, toward the north and east sides of the room. Remnants of the junction-box closures remain in these locations. In the larger western half of the Baggage Room, one ceiling-mounted fixture was centered and remains; in the smaller eastern portion of the Baggage Room, one ceiling-mounted fixture was located near the south end of the space. Remnants of this junction-box closure remain. Lighting in the bathrooms is not documented. In each of the waiting rooms, two ceiling pendant lights were centered in the spaces along an east-west line. In the Woman's waiting space (now Mechanical room) these pendant fixtures survive (Fig. IV-26). The Ticket Office, including its added passage space, had three ceiling fixtures centered along a north-south line. These are missing and replaced with more recent fluorescent fixtures.



Fig. IV-27. West elevation, north side c1950. Slate still exists, but gutter is demolished. B&O RR Museum photo.



Fig. IV-28. East side of tunnel enclosure, Newman photo, 2002.



Fig. IV-29. Door from waiting area out to platform. Six panel door and flat casing are modern alterations; three-light transom & its casing are original. GWWO photo, 2004.

Post-Move Modifications

The most substantial alteration to the station following the 1931 relocation came in 1950 when the tower over the relay room was demolished. The tower constituted one of several character-defining features of the station, and its elimination affected the overall massing of the building, as well as its visual presence when seen from a distance. The exterior stairs were eliminated at this time as well. A clipped-hip roof similar to the opposite side of the station was installed over the relay room, eliminating the notched southeast roof indent. At the vertical triangular space formed by the new roof, a solid infill of horizontal wood siding was provided.

At some point after the move, and before c1950, the building lost its guttering system, but still had the original slate (Fig. IV-27). Underlayment tar-paper was exposed, and no shingles were installed in this area. Following this, the building was re-roofed with asphalt shingles in place of the original slate. Because of the substantial work associated with the tower removal, this change may have occurred at that time. A replacement gutter system was not introduced, and currently water sheets off the edge of the roof.

In 1959 the last dormer of the building, positioned over the ticket office, was removed. Modern pine boards were introduced as the roof sheathing in this area. The window at the east end of the tunnel enclosure was removed and replaced with siding (Fig. IV-28).

The original doors into and out of the waiting room were changed after the building move. On the B&O relocation drawings these doors are shown as matching the others shown on the exterior. These doors no longer match. The original 3'-6" wide doors were replaced with standard 3'-0" wide, six-panel stile-and-rail units (Fig. IV-29). The casings around these doors had to be changed to accept the narrower door. On the interior, the original casings surrounding the transoms were retained, and plain, wider casing boards were used to surround the door jambs and head.

A flat plywood ceiling with wood battens covering the joints was installed in the waiting room sometime after the building's relocation. This ceiling is not indicated on the B&O drawings of 1931.

The building's exterior wood siding was sandblasted c1986. Besides removing previous paint layers, this mechanical system of paint removal lifted the softer layers of finish wood from the siding. A highly articulated graining of the wood siding now telescopes through the painted finish.

Westbound Waiting Shelter



Fig. IV-30. From Maryland Heights, c1896. The station is complete but the Westbound Waiting Shelter has not yet been built. Harpers Ferry Collection HF96.



Fig. IV-31. Before 1913. Five open bays toward the west and two enclosed bays toward the east were in place. Detail from photograph, Henry Freeman Collection.

Prior to 1898, westbound passengers had to cross the tracks at grade and wait for their trains without cover (Fig. IV-30). In October of that year, a three-sided wood shelter was erected, with its west end aligning with the west end of the station. The shelter's footprint is depicted in the 1903 Sanborn Fire Insurance Map. The side of the shelter facing the tracks was open.

Each bay of the waiting shelter was approximately 10 feet in length. From the Sanborn footprint, it appears that the shelter originally had three bays, or a total of approximately 30 feet. Its depth was approximately 10 feet. No early photographs of the open shelter have been located.

In 1910 an addition to the east of the shelter was constructed that included a 20-foot enclosed portion, to protect passengers during the winter months. At this time the overall length of the shelter was seven-bays or approximately 70 feet (Fig. IV-31).

The shed was constructed of 6x6 wood posts extending up from the platform 10 feet. 4-by-4 diagonal wood braces sprang at a 45-degree angle beginning at a height of six feet off the main posts on each of three sides (and on all four sides at the corner posts). 4-by-4 horizontal wood out-riggers, with carved ends, were supported by the outboard braces at each post, and in turn helped to support the shelter's roof-overhang. The hip roof gently curved to meet the outer edges of the overhang and was covered with standing seam



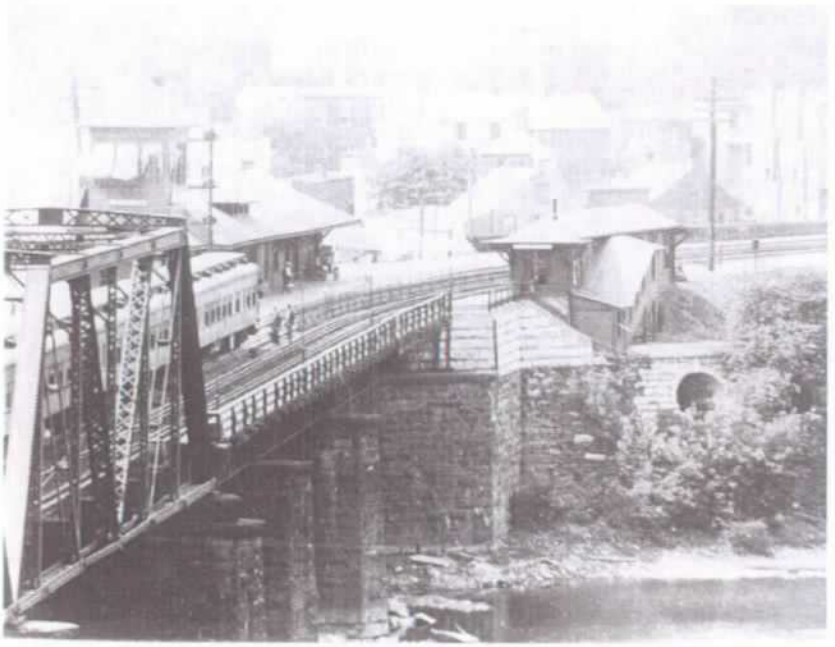
Fig. IV-32. Circa 1920 photograph of the station and Westbound Waiting Shelter, showing glimpses of the north-side sloped roof that covered the stairs up from the tunnel. Henry Freeman Collection.

Fig. IV-33. Circa 1920 photograph of the station and Westbound Waiting Shelter, showing the north-side sloped roof and enclosure that covered the stairs up from the tunnel. BORHS photo.



Fig. IV-34. 1931 photograph of the west side of the Westbound Waiting Shelter, following relocation. Henry Freeman Collection.

metal. There was no gutter. The enclosed portions of the shelter were sided with 6" wide boards placed vertically, with a groove reading between joints. A total of ten, four-over-four double hung windows were used in the shelter, cased with plain 1-by-4 wood trim and a 2-by-six sill. Below the sills on the exterior, a 2-by-3 horizontal wood water table separated the vertical siding.



Following the construction of the "Subway for Safety" in 1913, a roof addition was constructed to the north of the shelter, to cover the stairs up from the tunnel, and allow protected entry into the Shelter. This sloped roof covering can be seen in several of the photographs of the station prior to its relocation (Figs. IV-32 and 33). The steps led up to a landing and a large sliding door located on the north wall of the shelter between the third and fourth bays from the east end.

In 1931, the Westbound Waiting Shelter was relocated along with the Station, to the new site west of the original location (Figs. IV-34 and 35). The shelter was positioned so that the stairs up from the tunnel would now enter into the enclosed portion at the east end. This necessitated the removal of the sliding door on the north end of the shelter, and the enclosure of the opening. This direction is given on the 1931 B&O drawings that detail the move. Below the elevation of the shelter, the following note appears: "Present shed to be moved and placed over new subway stairs on West bound platform as shown."

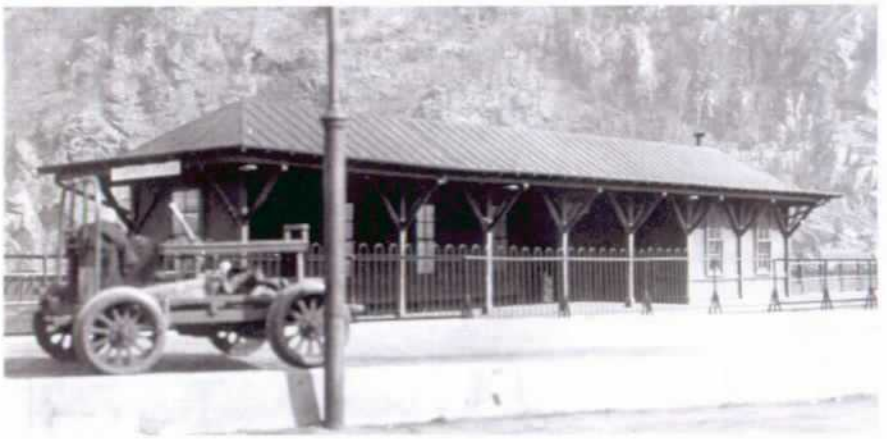


Fig. IV-35. Westbound Waiting Shelter, following move, c1931. Henry Freeman Collection.

Sometime during the last half of the 20th century, the Westbound Waiting Shelter was reduced in size, from seven bays to three bays (Fig. IV-36). The metal roofing was removed and replaced with asphalt shingles. In recent years, window openings have been boarded up with plywood panels.



Fig. IV-36. Westbound Waiting Shelter, Newman photo, 2002.



Fig. V-1. Metal pipe rail fence. GWWO photo, 2004.





Fig. V-2. Lamp post connection to fence and lamp head. GWWO photo, 2004.





Fig. V-3. (left) Temporary overflow parking lot. GWWO photo, 2003.
Fig. V-4. (right) Concrete structure. GWWO photo, 2004.



Fig. V-5. Rubble retaining wall. GWWO photo, 2004.

Physical Description

Exterior Site Features

The train station is bordered on the west and south sides by an asphalt parking lot, on the north by the railroad tracks and waiting shed, and on the east by the subway structure.

East of the parking lot, a pipe rail fence borders the edge of the property (Fig. V-1). The topography drops off 15-20 feet east of the fence to the archeological remains of the Harpers Ferry Armory below. The fence follows the edge of the asphalt parking lot to the south and ends near the overflow parking lot entrance. The fence is made from black painted 2 ½" diameter pipe steel (or cast iron) with "T" connectors. The height of the railing is approximately 2'-6" above the asphalt. The paint is flaking and several areas are rusting. The fence is missing several pieces, and is tilted back towards the east, partly impacted by commuters while parking their cars. There is a base flange connecting the fence to the ground at the northern end. The rest of the supports go into the ground.

Two site lights are in the proximity of the fence. The lamppost bases are as drawn and detailed in the HAER record drawings of 2002, sheet 13, and are from 1931 (and may be relocated from the earlier site.) The 1931 gooseneck arm and shallow reflector are missing, replaced with a modern interpretation of a coach lamp. One of the lamp posts is located approximately 10' from the southern end. The lampposts are attached to the fence with metal straps (Fig. V-2). The southern post has no lamp fixture.

The temporary overflow parking lot is located above remnants of the 1894 alignment of the rail line, running parallel to Potomac Street (Fig. V-3). The parking lot is detailed in NPS Drawing 385/41083. The railroad line extends from under the parking lot to within 8' of the parking lot entrance ramp. The line is in fair condition.

West of the parking lot is a concrete and rail structure labeled "CSX RR Signal Equipment" on Sheet L1 of NPS Drawing Number 385/41083 (Fig. V-4). The structure consists of four 12"x14 ½" concrete piers supporting two steel train rails. There is a concrete stair with 4-4" risers located at the west end of the structure. To the west of the concrete structure are two 4" high concrete pads.

The site to the south, where it borders Potomac Street, is edged with a rubble stone retaining wall in poor condition (Fig. V-5). Pieces of the wall are exposed and some of the wall has been buried by topsoil and grass. The parking lot entrance ramp, located to the west of the stone wall, is edged with modern concrete curb.

There is a modern wood footbridge located to the west of the entrance ramp that spans a drainage culvert (Fig. V-6). The bridge



Fig. V-6. Footbridge over culvert. GWWO photo, 2004.



Fig. V-7. Lamp posts to the north of the parking lot. GWWO photo, 2004.



Fig. V-8. Western end of metal pipe rail fence. GWWO photo, 2004.



Fig. V-9. Wood pavement edging. GWWO photo, 2004.

has 4x4 wood posts, a 42" high guard on the west side of the bridge, and 2x wood frame construction.

Between the north side of the parking lot and the active CSX railroad line are two typical lamp posts and lamps approximately 120' apart (Fig. V-7). Between the lamp posts is a post that is missing everything above the joint located at 3'-4" above the ground. On the north side of the track there are three full lamp posts and lamps, and four partial lamp posts. All of the full and partial lamp posts are located to the north of a metal pipe rail fence located approximately 12' from the northern track (Fig. V-8).

The fence starts at the waiting shed and extends to approximately 350' to the west of the train station. The top of the fence is 3'-2" above the ground. The fence is similar to the fence on the east edge of the site, but includes 1" diameter vertical metal pickets at 4" on center. The majority of the fence's black painted surface is peeling and flaking off. There are many locations of rust.

The ground is surfaced with asphalt pavement between the northern track and the fence. Likewise, there is asphalt pavement between the train station and the parking lot to the west. A swatch of pavement extends 75' to the west, creating a walkway to the north of the parking lot. Both of these areas of asphalt pavement are bordered on the parking lot side by wood edging (Fig. V-9). There is a mixture of asphalt pavement and gravel in the area under the roof overhang around the building. To the west and portions of the south, the ground surface is gravel. The rest of the building is bordered by asphalt pavement (Fig. V-10). Currently there is no positive drainage adjacent to the building. During rain, water ponds up to the face of the building. This condition is exacerbated by the lack of gutters on the roof.

There is a painted wood waiting bench located on the north side of the building. The bench is in fair condition and appears to be identical to a bench located in the building, although the one inside has a wood finish, not a painted finish (Fig. V-11).

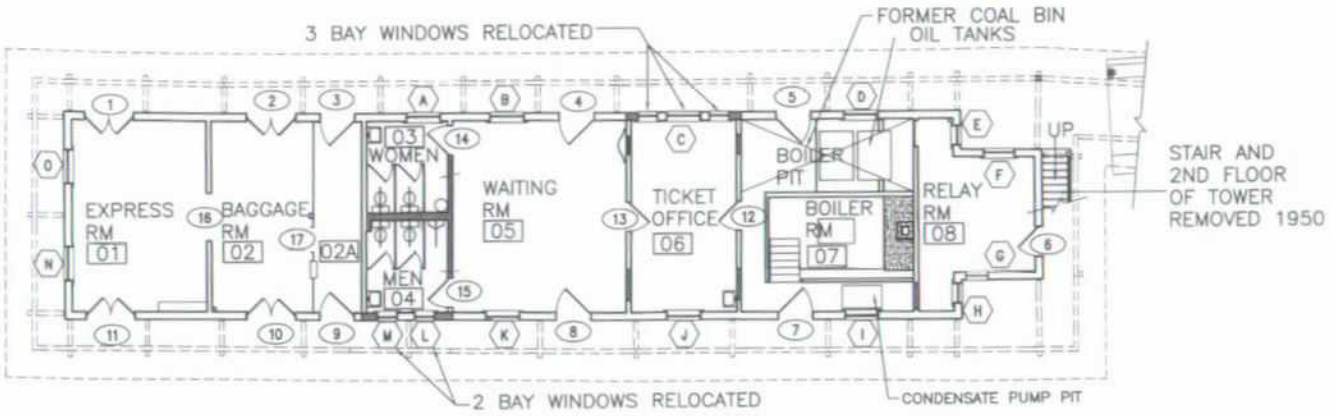


Fig. V-10. (right) Asphalt pavement and gravel surfacing around the building. Newman photo, 2002.



Fig. V-11. (far right) Wood waiting bench. Newman photo, 2002.

Exterior Building Features



Drwg. V-1. Above. Plan of the Harpers Ferry Station, showing room names and numbers, door numbers and window numbers. GWWO. 2004.



Fig. V-12. Asphalt shingles at ridge line. Newman photo, 2002.



Fig. V-13. Copper flashing at vertical intersection and at roof valley. Newman photo, 2002.

Roof

The existing roof surface of the Train Station is comprised of modern asphalt shingles that replaced the historic slate roof surface. The asphalt shingles show definite signs of wear and are in poor condition. They are cracked, peeling-up and bubbling. The shingles are residential grade black asphalt, 12" wide x 12" long with a 5" exposed face. The ridge lines and hip lines are covered with asphalt shingle ridge caps in equally poor condition (Fig. V-12).

Currently, rainwater is simply directed to the roof edge, and sheets off. There are no gutters, snow guards, drip edges or diverters.

Roof Flashing

Copper flashing is used to transition from asphalt shingles to vertical surfaces. This can be seen at the intersection of the gable ends of the main roof and the vertical surface of the side hip roofs (Fig. V-13). The flashing extends under the wood siding of the gable end and lap approximately 14" on top of the shingles on the hip roof. The exposed face of flashing that runs under the siding is approximately 3". The flashing is showing signs of wear, and in some locations it has lifted off of the shingle surface. The valley-flashing at the intersection of the eastern hip and the roof extending to the subway is located on top of the flashing (Fig. V-13). The flashing is lifting up off of the face of the shingles, and water is getting under the flashing.

Gable Ends

The east gable end of the main roof is surfaced with painted wood siding, similar to the siding on the building's exterior walls (Fig. V-14). This siding has not been sandblasted and is in fair to poor condition. The majority of the paint on the siding has either peeled off, or is in the process of peeling off. Two painted wood trim





Fig. V-14. (left) East gable end with no attic vent. Note telephone cable bracket. Newman photo, 2002.

Fig. V-15. (right) West gable attic vent louver and original painted slate trim. Newman photo, 2002.

boards are also located on the gable and are in similar condition to the siding. The lower board is 10" wide (with 6" exposed to view) and the upper board is 4" wide. The ends of the shingles from the main roof are exposed to sight with no closure trim or drip edge.

The east gable also supports a 4'-0" high steel angle support for incoming overhead telephone cables (Fig. V-14). The upright is a 3"x3" steel angle that extends over the roof ridge 16". The upright is connected to the gable by two sets of flat steel strap supports. The assembly is bolted through the siding.

The west gable end of the main roof contains an attic vent louver made of four pieces of painted wood siding in fair to poor condition (Fig. V-15). The majority of the paint on the louver has either peeled off, or is in the process of peeling off. The gable is trimmed-out with both slate and wood trim. The slate is shingle-lapped and is painted. Some of the paint has peeled off of the surface. The slate is approximately 10" wide (with 6" exposed to view). The exposed length of slate is 8". The upper painted wood trim board is 4" wide. There is an additional ogee trim between the upper wood trim and the edge of asphalt shingles on the main roof. The ends of the shingles from the main roof are exposed to sight with no closure trim or drip edge.

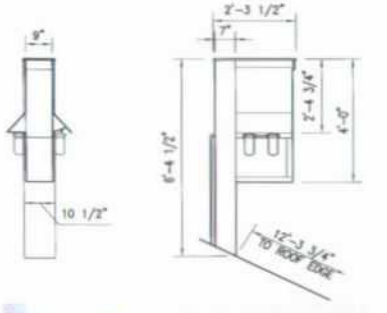




Fig. V-16. Track signal on north roof slope. Newman photo, 2002.

Track Signal

A painted, wood-framed track signal is located within the upper portion of the north roof slope (Fig. V-16). The top of the track signal extends to a height approximately 6'-4" above the roof surface, and faces the track. One set of signal lights, one orange and one red, are located on both the east and west sides. The painted wood post, trim and surfaces are in fair condition, although the majority of paint has peeled off. The lights are protected by a sloped wood overhang located on both sides of the signal. A metal electrical conduit extends from the signal, down the main post and up the roof to an antenna. This signal post-dates the 1931 building relocation and should be removed by CSX prior to the anticipated restoration.

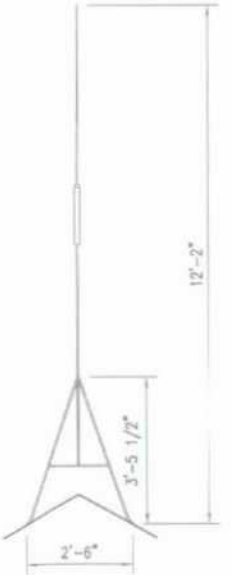


Fig. V-17. Antenna and chimney. Newman photo, 2002.





Fig. V-18. Rafter extensions with reverse ogee detail. Note lamp shade located on the timber beam. Newman photo, 2002.

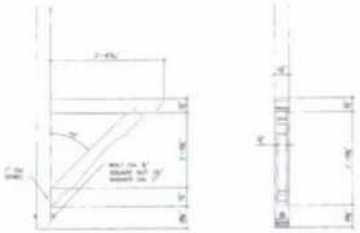




Fig. V-19. Roof Bracket and details. Newman photo, 2002.



Fig. V-20. Soffit lampshade. Newman photo, 2002.

Antenna

The antenna is located on the roof ridge in the location of the existing ticket office (Fig. V-17). The top is 11'-5" above the ridge line. It is connected to the roof by a tripod, with two legs on the north and one leg on the south roof face. As noted above there is a metal conduit connecting the antenna to the track signal. The antenna post-dates the 1931 relocation and should be removed in the anticipated restoration.

Chimney

The brick chimney is located on the south roof slope 4" down from the ridge (Fig. V-17). It is 1'-9" x 1'-9" and the top is 1'-10" above the ridge line. The brick and mortar is in fair to good condition. The brick is flashed into the asphalt shingles with metal flashing.

Vent

One toilet room vent is located just down the ridge line on the south roof slope. It is located above the toilet rooms. The vent extends approximately 6" above the ridge line.

Soffit

The roof overhang, rafter extensions, underside of roof and brackets are all in relatively good condition (Fig. V-18). Some of the rafters supporting the overhang are replacement (maybe 30%) for one rotted out. Currently several appear to need replacement. All pieces except the brackets and the timber beams supported by the brackets are painted a cream color. The paint is in fair condition and appears to be the same color as is on the siding. The paint color on the brackets is a dark brown and is in fair condition.

The rafter extensions rest on 5¼" x 7¾" timber beams, which are supported by the brackets (Fig. V-19). The rafter extensions have a gentle reverse ogee detail that starts near the beam and extends to the rafter end. Rafters comprising the overhang to the subway do not have the ogee detail. Some of these rafters are square cut and some are chamfer cut at the ends. The rafters are made from 2½" x 5½" lumber. The rafters support two layers of ¾" x 4" offset roof decking.

The roof structure is detailed in the HAER record drawings of 2002, sheet 10, and the bracket is detailed on sheet 13. There are 30 brackets around the perimeter of the building, 28 are identical to the detailed bracket. At the Relay room, the bracket on the north has an additional angled member and extended top member, and the bracket on the south has an extended top member.

There are nine lampshades under the soffit (Fig. V-20). These are drawn on the HAER record drawings of 2002, sheet 13. They are located on the timber beam and as follows: centered on doors 2, 4,



Fig. V-21. Wood sign. Newman photo, 2002.

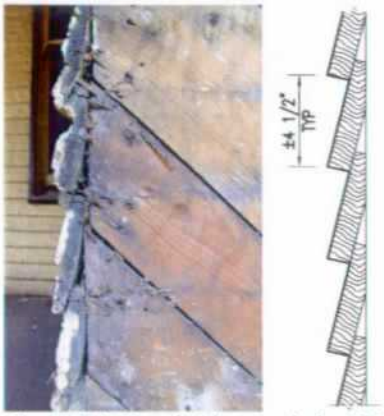


Fig. V-22. Wood siding and sheathing. Newman photo, 2002. GWWO drwg.

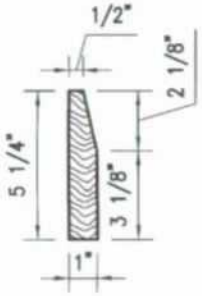


Fig. V-23. Detail of wood siding. GWWO drawing.



Fig. V-24. Downspout collector boxes. Newman photo, 2002.

10, 8, and 7; east of window D; east of window H; in the southwest corner and the northwest corner of the building. These lampshades are similar, but not identical, to the drawn pole-mounted variety.

There is a 2'-6"w x 2'-0"h wood sign located on the north-south bracket in the southeast corner of the building. It is painted the same dark brown as the brackets (Fig. V-21).

Exterior Walls

The exterior walls are comprised of wall studs of three sizes: 6" x 6" located at the brackets, 4" x 6" flanking door and window openings, and 2" x 6" elsewhere between openings. Studs are covered with ¾" plank sheathing (width of planks varies from 4" to 10") and wood siding (Fig. V-22). The plank sheathing is installed at a 45-degree angle to the studs. They are spaced a nails-width apart from one another. The wood siding is in poor condition mainly due to the sandblasting that occurred in 1986, and years of weather damage. The siding has a +/- 4½" exposed face and is slightly less than 1" thick, which may have been 1" prior to sandblasting (Fig. V-23). The siding was installed from the bottom to top, with nail attachment occurring in the non-exposed top ¾" of each piece of siding. There is also evidence of nail attachment occurring in the bottom ¾". This may have been a later remedial correction to the siding "cupping" in several locations around the building due to the effects of rain and the elements.

Downspout Collector Boxes

Two of the original six historic downspout collector boxes exist, one between windows A and B on the north side of the building, and one between windows L and K on the south side of the building. Four of the collector boxes are missing. The painted black collector boxes are both 5 ½"w x 4 ½"d at the shaft and are 4'-9" from ground to top. Both boxes have broken attachment brackets a few inches down from the top (Fig. V-24).




Fig. V-25. Doors 1 and 11. GWWO photo, 2004.




Fig. V-26. Doors 2 and 10. GWWO photo, 2004.




Fig. V-27. Doors 3 and 9. GWWO photo, 2004.




Fig. V-28. Doors 4 and 8. GWWO photo, 2004.




Fig. V-29. Doors 5 and 7. GWWO photo, 2004.

Openings

Each of the exterior wood doors around the perimeter of the Train Station belong to one of four door types. The common features of the door types are drawn and detailed in the HAER record drawings of 2002, sheet 11. In general, the doors are in fair condition. They have a variety of miscellaneous hardware, jamb details, glass panels and sill heights. These items are listed in the field inventory in the Appendix. All of the doors are painted. Typically the doors on the north are the same type as those on the south. The descriptions below will look at both sets together.

Doors 1 and 11 (type 1) have double 2'-6" x 7'-6" doors, with an active and an inactive leaf (Fig. V-25). The doors come together in an interlocking lap-detail. They have metal jamb protectors that extend from grade to 4'-0". The sill at Door 1 is slightly above the pavement, while the sill at Door 11 is 4" above the pavement. The transoms over both doors are painted glass and have metal grills.

Doors 2 and 10 (type 2) have double 2'-6" x 7'-6" doors, with an active and an inactive leaf (Fig. V-26). The doors come together in an interlocking lap-detail. They have metal jamb protectors that extend from grade to 4'-0". The sills at Door 2 and 10 are both slightly above the pavement. The sill at Door 10 has an added door stop. These doors have a chamfer detail in the paneling not found on any of the doors. Likewise, these have a glass-over-glass detail that is different than the typical side-by-side panel details found in the other doors.

Doors 3 and 9 (type 4) have single 3'-5" x 7'-6" doors (Fig. V-27). Door 3 has upper glass panels, while door 9 has the typical painted panels. The sills at Doors 3 and 9 are both slightly above the pavement. The sill at Door 9 has an added door stop.

Doors 4 and 8 (type 3) have single 3'-0" x 7'-0" doors (Fig. V-28). These doors are more modern than the rest of the doors and have a 2-over-2-over-2 panel layout. The panels are painted a light tan color, while the stiles are painted dark brown. Door 4 is set towards the exterior in the opening, while door 8 is set towards the interior in the opening. There is no sill at door 4; the pavement extends under the door.

Doors 5 and 7 (type 4) have single 3'-5" x 7'-6" doors (Fig. V-29). Door 5 has no sill, the pavement extends under the door. The sill of Door 7 is elevated 7" off of the pavement.

Door 6 (type 4) has a single 2'-11" x 7'-6" door with jambs and sill in very poor condition (Fig. V-30). The paneling on Door 6, while similar to the other historic doors, are slightly different in detail.



Fig. V-30. Door 6. GWWO photos, 2004, throughout this page.



Fig. V-31. Windows A, D & F.



Fig. V-32. Window J



Fig. 33. Windows L and M



Fig. V-34. Windows N and O



Fig. V-35. Windows B, I & K

Windows

Each of the 15 windows around the exterior of the building belong to one of four window types. The common features of the window types are drawn and detailed in the HAER record drawings of 2002, sheet 12. The majority of the windows are virtually identical in detailing. The most typical window (Type B) is a six-over-two window that is 7'-9" h x 4'-3" w (outside of trim). A smaller four-over-one window is the next prevalent (Type A). The Type C window contains two Type A windows and one Type B window. Type D is a one-off window that is 1'-11 w x 2'-4" w and does not contain details similar to the other types.

In general the windows are in fair condition. The heads, jambs and sills are painted dark brown and the windows are painted a light tan.

The following describes the non-typical features of the windows:

Window A, D and F (type B) have painted glass in the lower sashes (Fig. V-31).

Window J (type B) has an air conditioner in the lower sash opening (the lower sash is intact and raised). There are painted wood panels on each side of the air conditioner (fig. V-32).

Windows L and M (type A) have painted glass in the lower sashes. Window L has wire glass in the lower sash, and Window M has an added plywood panel covering its lower sash (Fig. V-33).

Windows N and O (type B) have painted glass in both the upper and lower sashes, and have wire mesh security screens over the entire window (Fig. V-34). The mesh is mentioned in the 1919 ICC inventory of the building, and probably dates to the 1916 creation of the Express Office.

Windows B, I and K (type B) (Fig. V-35); Windows E and H (type A) (Fig. V-36); Window G (type D) and Window C (type C) (Fig. V-37) have the least variations from the HAER record drawings. These windows are in fair condition, and have all clear glass.



Fig. V-36 . Windows E and H



Fig. V-37. Windows G and C



Fig. V-38. Ceiling and Type "A" Cornice detail, Mechanical Room 07. Type "A" beaded board is seen between beams. GWWO photo, 2004.



Fig. V-39. West and East end wall-ceiling conditions at original Women's Waiting Room, now Mechanical Room 07. Note that Cornice Type "A" and canted upper closure board ringed the room. Newman Photo, 2002.



Fig. V-40. Attic area above existing ceiling, Waiting Area 05. This construction was originally exposed to the space below. Newman Photo, 2002.

Overview of Common Interior Features & Materials

This section reviews the elements that are common to multiple spaces within the station, including types of ceilings, crown moldings, walls, chair rails, bases, and flooring. Common door and window openings, including casings are considered here. Following this section, each interior space will be discussed individually, with reference back to these common elements where appropriate.

Ceilings

In the major public spaces (originally the Men's and Women's Waiting Rooms) ceiling beams were exposed and received by Type "A" cornice (see below). Much of the original condition remains visible in the Mechanical Room 07 (the original Woman's Waiting Room, Fig. V-38 and 39). Beams have chamfered sides and support Type "A" beaded board (see below). The space between the projecting cornice and the sloped beaded board of the ceiling was closed off with flat wood stock canted back from the leading edge of the cornice (see Fig. V-38). The east and west end walls of the Women's Waiting Room rose vertically to meet the gambrel ceiling form, and the cornice with canted upper closure board continued along these walls (Fig. V-39). This is confirmed by the extant detail on the west wall and the ghosted line in the existing east wall of Mechanical Room 07. The condition is also drawn in the details shown in the extant B&O System 1931 renovation drawings, Section A-A.

The attic area over the Waiting Room 05 (originally a portion of the Men's Waiting Room) contains a gambrel-ceiling design similar to the Woman's Waiting Room (Fig. V-40). This ceiling was exposed during the 1931 building relocation, confirmed by extant B&O System 1931 renovation drawings, Section A-A. Lower ceilings were added to this space, some time after the 1931 renovations. The added lower ceiling is composed of plywood sheets with 1-1/2" by ½" battens covering the board joints.

The ticket office that separated the two waiting rooms originally had a dropped ceiling of Type "A" beaded board that survives. The original alcove (hall) south of the Ticket Office also had a lower ceiling of Type "A" beaded board. When the wall separating the alcove from the ticket office was removed in the 1931 renovations, small pieces of scrap board were inserted flush at the ceiling plane to close off the condition. Note that the beads of the two sides of the patch do not align (Fig. V-41). This non-alignment confirms independent installations of the two ceilings, divided by the original wall which extended beyond the ceiling plane.

Express Room 01 and Baggage Room 02 and 02A are shown in the B&O System 1931 renovation drawings, Section A-A, as flat,



Fig. V-41. Ceiling detail, Ticket Room 06. The infill patch marks the location of the original wall that separated the ticket office from a south hall that connected the men's and women's waiting rooms. In 1931 the wall was removed, and the ticket office enlarged. GWWO photo, 2004.





Fig. V-42. Type "A" cornice and ceiling detail, Express Room 01. The flat ceiling is consistent with the section detail included in the 1931 B&O renovation drawings. GWWO photo and drawing, 2004.





Fig. V-43. Type "B" cornice and ceiling detail, Baggage Room 02. Type "A" beaded board is on the ceiling. Type "B" beaded board is on the wall toward the left side of the image. GWWO Photo and drawing, 2004.

positioned directly above the Type "A" cornice (see below). These spaces did not need the canted board above the cornice. These flat ceilings remain (Fig. V-42 and 43).

Type "A" Cornice: Based upon the extant B&O System 1931 renovation drawings, Section A-A, and upon field investigation undertaken in 2004, a cornice appeared in the areas of major public use. The cornice transitioned to flat ceilings of Type "A" beaded board (see below), with beads running in the east-west direction, in the Express Room 01 and Baggage Room 02. The same cornice, with the addition of the canted closure board placed between exposed beams, was used in the Waiting Area 05 and Mechanical Room 07 (originally the Men's and Women's Waiting Rooms).

The cornice profile currently matches in all spaces except for the Baggage Room 02, which has Type "B" cornice described below. The profile for Type "A" includes a cyma reversa located highest. Below this is a cavetto molding with fillet, that transitions to 2-3/4" high flat stock. A small ogee bottom trim closes the cornice to the wall. Excluding flat ceiling trim, (a recent addition to close plywood ceiling joints, and found only in Room 05) the cornice measures overall 3" wide by 7-1/2" tall. The profiles are painted.

Type "B" Cornice: A second—less elaborate—cornice profile, perhaps salvaged and reused sometime following the 1931 renovations, can be seen throughout both portions of the Baggage Room 02. A cavetto molding surmounts a cyma reversa, (just the reverse of the Type "A" molding,) to create an overall cornice that measures 4" wide by 3" high. There is no lower flat stock associated with this molding profile. The moldings are painted. The extant B&O System 1931 renovation drawings, Section A-A, show both the Express and Baggage areas with an identical cornice detail, which today remains only in the Express Room 01.

Wall and Ceiling Material

Type "A" Beaded Board: This interior ceiling and wall material was used during the original, 1894 construction, and was installed throughout most of the spaces. Examples of this board survive in most rooms, typically painted. Areas in the Relay Room 08, and in the Mechanical Room 07 exist with the boards stained. Board widths vary from between 2-1/4" to 3-3/4", with an average of 3". The bead dimension is a consistent 3/16" wide.

Type "B" Beaded Board: During the renovations associated with the installation of the subway, in 1913, a different type of beaded board was used. This board has a more uniform width than found in "A" and averages 2-1/2". The largest expanse of this wall is seen in the



Fig. V-44. Types "A" and "C" beaded board, west wall, south side, Relay Room 08. The original Type "A" board comprises the majority of the wall. Type "C" was used in 1931 to infill the opening to the ladies toilet. Newman Photo, 2002.

Fig. V-45 (right). Types "A" and "C" beaded board, east wall, south side, Waiting Room 05. The original Type "A" board comprises the majority of the wall and is seen at the top of the image. Type "C" was used in 1931 to infill the opening to the hall. GWWO photo, 2004.



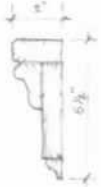


Fig. V-46. Typical chair rail, south wall, Waiting Room 05. GWWO photo and drawing, 2004.

partition that separates the Baggage Room from the Women's Toilet Room.

Type "C" Beaded Board: This interior wall material was used for the interior repairs and wall infill that occurred during the building relocation, 1931. Portions survive in several areas, typically painted. The largest expanse of this type of wall is seen in the west wall of the Waiting Room 05, which was added when the stair down to the subway was eliminated, because of the building relocation. Similar to Type "B" beaded board, the boards of Type "C" are fairly uniform in width, but here are narrower and average 1-3/4". The bead dimension is slightly less than the 3/16" width found in Type "A" or "B".



Typical Chair Rail: The built-up chair rail appears to have been used in the primary public spaces in the original 1894 construction (Fig. V-46). Evidence of its original existence remains in areas of Waiting Room 05, Mechanical Room 07, and the north alcove of the Relay Room (which was originally part of the Women's Waiting Room). At the time of the 1931 renovations, the rail appears in the B&O System renovation drawings, Section A-A, located on the east, south, and west walls of both waiting areas (currently Rooms 05 and 07). It is not shown on the south wall of the hall between the two rooms, (currently ticket room south wall), nor in the Express or Baggage Rooms, and it does not exist in these areas today. Where it does remain, the rail is typically mounted 3 feet off of the finished floor, and overall measures 2" wide by 5-1/2" high. The rail cap has eased edges. The main body of the rail is plain board, 7/8" wide by 3-3/4" high. An ogee double curved trim piece closes off the joint under the cap back to the main body. A smaller ogee trim closes the joint



Fig. V-47. Base and floor condition, Waiting Room 05. GWWO photo, 2004.



Fig. V-48. Base and floor condition, Ticket Office 06. GWWO photo, 2004.



Fig. V-49. Cross section at finish floor condition, under radiator, south wall, Waiting Room 05. GWWO photo, 2004.

between the bottom of the main body and the adjacent wall (Fig. V-46). The rail aligns with the windowsills in principal rooms and transitions seamlessly into the apron profile under the sill. Currently the chair rail, where it remains, is painted the trim color of the room.

Typical Base: All public rooms, including the Waiting Areas, Ticket Office, Express and Baggage Rooms originally had a three-piece base, with the cap consisting of a combination bead above cyma reversa, the body consisting of flat stock, and the shoe mold consisting of partial ovolo below quarter round (Fig. V-47). The profile is drawn in the HAER drawings for the building, dated 2002, sheet 14. Remnants of this base, currently painted black, can be found in these rooms. Most typically, the flat central trim piece remains, with the shoe molding missing. In the Main Waiting Room 05, the cap is also missing. The shoe may have been removed when the wood floors were removed for the abatement treatment undertaken in 2003 (see below). The extant 1931 B&O System renovation drawing, Section A-A, shows the base in all rooms except the room under the tower (currently the Relay Room 08).

Typical Flooring: The majority of the flooring in the building was removed under a hazardous material abatement program conducted in 2003, pursuant to recommendations of the U.S. Public Health Service and the U.S. Environmental Protection Agency. The floor had penetrating stains impregnated with naphthalene, toluene, methylene chloride, and P-isopropyltoluene. (See *Environmental Assessment Report, Restoration of the Harpers Ferry Train Station*, October, 2003, pp. 38ff.) Flooring remains at areas under the original walls, and the cross-section of the original construction is visible. Floor remnants have a dark brown stain. The finish floor was a 3" wide by 1-1/8" thick tongue-and-groove wood laid over a 6" wide by 1" thick tongue-and-groove subfloor laid on the diagonal. Following removal of the original flooring in 2003, temporary ¾" plywood was installed. Flooring in bathrooms Women 03 and Men 04 was removed and replaced with ¾" plywood and modern sheet vinyl.



Fig. V-50. Double doors and transom in opening 11, south side of Express Room 01. GWWO photo, 2004.



Fig. V-51. Double doors and transom in opening 2, north side of Baggage Room 02. GWWO photo, 2004. The open partition within the Baggage Room, seen to the right, dates to c1913.

Typical Openings

Double Doors: The building has two sets of exterior double-door openings, on the north and south sides, accessing the Express Room 01 and Baggage Room 02. The overall sizes and arrangements of these four openings, 4'-10" wide by 10'-5" high, are consistent. Each of the four openings has a four-light transom window surmounting the doors. Transoms were originally designed to be in-swinging, hinged on the top, with awning-type operation assisted by a side rod mounted to the casing of the door below. Each of the eight door leaves currently has a large vertical panel above two smaller wood panels. However, the doors shown in the 1931 B&O renovation drawings have a pair of narrow vertical upper panels over two lower horizontal ones. All eight leaves may be post-1931 replacements. The extant detailing of the door molding and upper panel infills is not uniform. The pairs of doors located in the Express Room 01 (Fig. V-50), and drawn on the HAER record drawings of 2002, sheet 11, Type 1, have upper solid wood panels, with detailing at the panel edges similar to that found on the single leaves discussed below.

The four door leaves in the Baggage Room 02 (Fig. V-51), drawn on the HAER record drawings of 2002, sheet 11, Type 2, have stiles and rails with a 3/8" chamfer beginning 1-1/2" from each panel corner. This chamfer is not present in any of the other doors extant in the building, although it is seen in the detailing of the exposed ceiling beams in the original Women's Waiting Room, now the Mechanical Room 07. Further differentiating these doors from those in the Express Room, the upper panels are infilled with glass, divided horizontally into two almost-square panes with a 1" wide by 1-1/2" deep muntin (profile atypical to that found throughout the transoms.) This glass installation is not original to the door, but a later adjustment, perhaps done to provide additional light into the Baggage area. Dating the time of the alteration has not been accomplished, but localized paint analysis could prove useful. Exterior and interior casings for the four openings are similar, and consistent with those found throughout the project (see below).

Single Doors: The most common—and original to the 1894 construction—of the single leaf door openings include the exterior doors to the original Baggage 02A, Woman's Waiting Room (now Mechanical Room 07), and to Relay Room 08. The doors are drawn on the HAER record drawings of 2002, sheet 11, as Type 4. The openings have a nominal 3'-6" width by 10'-2" height, including a three-light transom window surmounting the door opening. Transoms are top hinged, with an in-swing awning operation. Stile and rail door leaves include two vertical upper wood panels above two horizontal lower wood panels. (Pairs of upper vertical glass panels were indicated for the two exterior doors into Baggage 02A on the elevations of the 1931 B&O renovation drawings, and these

exist with glass today.) Exterior and interior casings for the openings are similar, and consistent with those found throughout the project (see below). The same style of door, without the transoms, is found on several interior openings, including the current Women's Room 03 and Men's Room 04. The Women's Room door and related casings were probably relocated from their original location (accessing the original women's room seen in the 1894 floor plan) when the building was moved in 1931. The Men's Room door remained in place, despite the adjustments to the men's toilet room beyond.





Fig. V-52 (left). Typical single interior door and casing, east wall, Ticket Office, 06. Interior openings typically used the 4-panel stile-and-rail door similar to that found on the exterior. GWWO photo, 2004.

Fig. V-53 (right). Single door and transom, south side of Waiting Room 05. Door and casing are replacements, transom and its casing are original to the 1894 construction. GWWO photo, 2004.

The two exterior doors probably used most extensively were the ones central to the north and south elevations, providing access to the Men's Waiting Room, now called Waiting Room 05. These doors, drawn in the HAER record drawings of 2002, sheet 11, Type 3, and their interior casings are not original to the 1894 construction, and may have been added during or sometime after the 1931 building relocation. Almost 40 years of hard use may have caused deterioration of the original door-jamb hinge connections. (Local paint analysis could help date the period of the alteration.) The door leaves currently in place have a traditional six-panel, stile and rail design; with the upper two panels the smallest. These two doors match no others in the project. Transoms with three divided lights, which match those over the other single-leaf openings, surmount the doors. Interior casings around the transoms match the typical profiles used in the building (see below). However, the ¾" thick, plain, flat casings used around the door jambs and head are atypical to the 1894 construction. The casing widths at the four jambs varies from 7-1/4" to 8." The head pieces also vary, with one 7-3/4" and the other 8". The original jamb casings of the transoms butt into the top portions of the flat head trim of the door.



Fig. V-54. Single doors to restrooms, off Waiting Room 05. Door and casing on the left, to Men's 04, is original to the 1894 construction, while the one on the right to Women's 03 was relocated here in 1931. GWWO photo, 2004.



Fig. V-55. South double-hung window Type "B" at Waiting Room 05. GWWO photo, 2004.

Windows: The project contains two typical double-hung windows. A relatively narrow, four-over-one design, is designated Window Type A as drawn on the HAER record drawings, 2002, sheet 12. This type is used in seven openings on the building. A wider, six-over-two design, designated Window Type B on the HAER record drawings, 2002, sheet 12, is used in nine openings. All windows appear to have been part of the original construction, but several have been repositioned/relocated during the renovations that occurred in 1931 when the building was moved.



Fig. V-56. Ganged double-hung windows Type "A" and "B", south wall, Ticket Office 06. These windows were relocated from a projecting bay that was removed during the 1931 building relocation. GWWO photo, 2004.

Both Window Type A and B have upper muntin profiles that match: 7/8" wide by 1-1/2" deep to the face of the glass; the lower muntins in the Type B windows do not match the upper ones, and are fatter and shallower at 1" wide by 1-1/4" deep to the face of the glass. An explanation, which might account for the differences in muntin size, is based upon the differences is glass size, with the lower sash having much larger lights. The overall design of the Type "B" windows is unusual in that the lower muntin does not visually align with any upper muntin. One explanation for this arrangement might be based upon a desire to have the general proportions of the lights in the lower sash be compatible between the Types "A" and "B" double hung windows. (Other windows found in Baldwin-designed train stations also demonstrate a non-alignment of muntins. See, for example, the Lanaconing, MD station, with 12-over-4 windows, with three columns of panes in the upper sash arrangement, and two columns in the lower.)

Door and Window Trim: A consistent, late-Victorian interior window and door casing was originally used throughout the project. Much of



Fig. V-57. Cased opening looking from Express Room 01 to Baggage Room 02. No plinths at base of jamb casing appears here. GWWO photo, 2004.

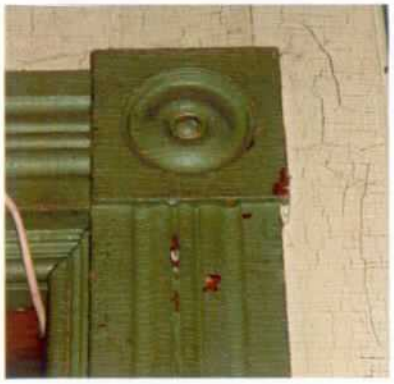


Fig. V-58. Detail at upper bulls-nose corner medallion, same opening, looking from Room 02. GWWO photo, 2004.

this material remains. Upper bulls-eye corner blocks, 4-3/4" square, flank a casing profile that has six routed indentations centered and symmetrical across the 4-1/2" frame. Profiles are detailed on the HAER record drawings, 2002, sheet 14. At doors, some jamb casings extend to the floor, while others are received by 8" high by 4-3/4" wide plinth blocks. Where these exist, they are noted within the individual room descriptions. At the head of doors, below the transom, a different casing profile is used, that includes a central inset fillet. At windows, the sill and apron cross-sections match the typical chair rail detail (see above). In cases where the window opening sits in a wall with a chair rail, the sill arrangement is a seamless continuation of the rail detail.

Flat interior casing ranging from 7-1/4" to 8" wide has replaced the original design at the two exterior doors currently located in the Waiting Room 05.

Individual Interior Room Descriptions



Fig. V-59. Door 11. GWWO photo, 2004.

The Express Room – 01

The ceiling in the Express Room is type "A" beaded board running east – west. There are remnants of two surface mounted fixtures visible.

The room has type "A" beaded board on all four walls, as well as type "A" crown molding. The entire room has a two-piece wood base, which is identical to the typical base except it is missing the quarter-round shoe mold. All four walls, crown and base are painted. There is no chair rail, nor any evidence that one ever existed.

The north and south walls contain solid wood double doors thought to be post 1931 replacements. The doors are located on the western side of the room. They have typical wood casing with no plinths. Over each door is a four light, in-swing transom. They are top hinged and retain the metal hardware and operator rods. The north door (Door 1) has a black metal knob. The south door (Door 11 – Fig. V-59) has a black metal box lock but is missing the knob. Both doors have surface mounted throw-bolts top-mounted.

There are two windows in the room, both located on the west wall. Both windows are type "B" windows. Both windows have typical casing with the typical chair-rail sill although it is not continued down the wall. The north window (Window O) retains its original sash, lock and thumb-lifts; the south window (Window N) is missing its lock but does have its thumb-lifts.



Fig. V-60. Remains of Shelving on the east wall. GWWO photo, 2004.

The east wall is divided by a double-door opening, Opening 16, which is cased but missing the doors. There is evidence of past hinging on the west side of both jambs. The casing is typical of the original construction. Toward the northern corner of the east wall, two lines of shelving are ghosted in wall tone, 7' and 8'-4" (Fig. V-60). Two brackets still exist for the upper shelves.

There is a wood stepback cabinet at the eastern side of the south wall. It is a four-door unit with 2 panels on each door. The trim and medallions on the cabinet are similar to typical casing but not identical. (See HAER drawings.) The cabinet is approximately 6'-6" in height. The exterior of the cabinet is painted while the interior is varnished. Above the cabinet there are two paint lines where previously shelves hung.

There is a paint line at 5'-11" above finished floor indicating the past presence of shelving on the north end of the west wall. There is a mid-20th century light switch to the west of Door 11.



Fig. V-61. Infill at the south end of the east wall. GWWO photo, 2004.

The Baggage Room – 02

The ceiling in this room is type "A" beaded board running north – south. There is mounting evidence of two ceiling lights, however the fixtures are missing. In the southeast section of the ceiling allowing access to the attic, there is a plywood-covered attic hatch.

The walls are covered primarily in type "A" beaded board. The northern portion of the east wall has type "B" board. There is an infill on the southern section of the east wall measuring 3'-11" x 7'-10" (Fig. V-61). This area is filled in with type "A" beaded board, however, at the top of this area, the beads of the infill misalign above and below the seam. The crown is type "B." The base is typical. There are two double doors, Doors 2 and 10, across from each other on the west side of the north and south walls. Both doors have black metal box locks with brass handles as well as surface-mounted throw-bolts one modern and one historic. Doors 2 and 10 have typical four-light transoms over them with the operating mechanisms partially intact on both.



Fig. V-62. Ad hoc wood cabinet. GWWO photo, 2004.

There are two single doors, Doors 3 and 9, along the east side of the north and south walls. They are typical single doors, which appear original to the building. Both doors have the typical casings and three-light transoms. The transoms have partially intact operating mechanisms. Although identical in every other aspect, Door 9 has glass in the top two panels while Door 3 is solid wood.

Along the north wall, there is a modern shelf, which is a 7' long, ½" thick wood plate held up by three brackets. There is a boxed chase in the southwest corner, which is 4.5" x 5" and runs from floor to ceiling.

There is a separating north – south partition wall through the Baggage Room that dates through paint analysis to c1913 (refer to Judith Sullivan's final report, June 1, 2004). The smaller, eastern portion of the room has been named 02A. The partition wall is composed of a series of approximately 3" wide slats of wood spaced approximately ¾" apart in a picket fence fashion that run from floor to underside of beam. There is a 6"x6" chamfered wood post in the center of the partition wall. On the south side of the slat wall there is a small ticket window. Between this window and the central post there is a doorway, although the door is missing. Doors 3 and 9 are east of the partition. Door 3 is almost completely covered by an ad hoc wood stepback cabinet (Fig. V-62). The cabinet has four drawers on a lower section and a shallower second tier that is open, containing 2 shelves. The entire unit is painted on the exterior and varnished on the interior.



Fig. V-63. Impression from previous hinges on north jamb of Door 14. GWWO photo, 2004.

Ladies Restroom – 03

The ceiling in this room is type "A" beaded board running east and west. There are two 2x4 fluorescent fixtures. The floor is modern sheet vinyl over ¾" plywood that replaced earlier flooring removed in 2003.

The north and south walls are covered in type "A" beaded board. The west wall is covered in type "B" beaded board, which is assumed to have been installed in 1913 when the stairway to the subway was created. The east wall is covered in type "C" beaded board. The cornice on the north, east and west walls is type "A." Unless otherwise noted, all interior elements of this room are assumed to have been installed in 1931, when the room was constructed. The base is absent on the north and west wall; however there are ghosted paint lines indicating its earlier existence.

There is one door, Door 14, located on the east wall. It is a typical, single door with intact, typical casing. The knob is porcelain with a painted metal rectangular backplate. There is a Russwin hydraulic opener. There is a surface-mounted dead bolt above the knob. There is evidence on the casing that hinges were once installed on the north jamb (Fig. V-63).



Fig. V-64. Window A. GWWO photo, 2004.

There is one window, Window A, in the Ladies' Restroom (Fig. V-64). It is located on the north wall and is a typical type "B" window. The casing, medallions and sill are all typical.

The north wall has a pipe running from the floor to the ceiling, bisecting the wall. To the left there is a modern heater at about 2 feet high above finished floor and above that is a paper towel dispenser. There is a plywood patch below the window that extends to the floor. There is a radiator, painted black, up against the North wall below Window A.

The cornice on the south wall is a 1 ½" ogee crown. The base is 8" high and is flush with the beaded board. The toilets and their stalls back up against this wall. Outside of the stalls is a hot water heater and associated piping, which is assumed to be modern.

At the north end of the west wall, there is a sink, framed mirror, and soap dispenser.

The entire room had different finishes in November 2002. These were removed sometime between that time and the end of 2003.



Fig. V-65. Windows M and L, Newman Photo, 2002.



Fig. V-66. Windows M and L, GWWO photo, 2004.



Fig. V-67. West wall showing infill. GWWO photo, 2004.

Men's Restroom – 04

The ceiling in Room 04 is type "A" beaded board running east – west. The floor is modern sheet vinyl placed over modern ¾" plywood underneath. The north, east and south walls are covered in "C" beaded board. At the west wall, the first 4'-6" portion, in from the south has Type "A" beaded board up to a height of 7'-10". North of this line is Type "B" beaded board. A high patch above the Type "A" board extending laterally 2'-8" from the south corner, and vertically up to the ceiling, has Type "C" beaded board. The crown on all four walls is comprised of a 2" X 6" modern board. There is no base on the east, south and west walls although there are paint lines to indicate their past presence.

Door 15 is on the south side of the East Wall. It is a typical four panel solid wood door. It is painted white with a white porcelain handle and a white metal back plate. There is a surface mounted dead bolt above the historic knob. Door 15 has an historic spring closure. There are two identical windows, L and M, on the South Wall (Fig. V-65 and 66). They are type "A". Both have typical casing. Both have plain sills which extend 1 ¾" off the wall above a flat 2" apron. In Window M, the lower window is broken and has been covered with plywood; a paper towel dispenser has been attached to plywood. The pulley is missing in Window M. The bottom pane is painted white in Window L.

The base on the north wall is 8" and flush with the wall. The toilet stalls back up against the north wall with their associated plumbing. There is a small modern dispenser on this wall. The wall was built in 1931 when the ladies room was moved adjacent to it.

The south wall originally had a bay around the windows but was pushed back in 1931 before the building was moved. The cornice is similar to the West Wall. There is a black radiator below Window L. There is a modern electric heater in the upper eastern corner.

The northern half of the west wall is type "B" beaded board. At 54" from the south wall, it becomes type "A" beaded board. There is a type "C" beaded board patch from the southern wall over 44" and from 94" up to the crown (Fig V-67). There is a sink, waste pipe and mirror on the south end of the west wall.

The entire room had different finishes in November 2002. These were removed sometime between that time and the end of 2003.



Fig. V-68. Door 8. GWWO photo, 2004.

Waiting Room – 05

The ceiling in the waiting room is 4' x 8' painted plywood panels in which the seams are covered by 1 ½" x ½" battens. The original historic gambrel ceiling with exposed beams and beaded board exists above the plywood panels.

All four walls in the waiting room are covered with the type "A" beaded board. The cornice is typical and is intact throughout the room. The base is an 8-inch painted, flat board. There is a typical chair rail on the north, south and east walls but not the west.

There are two modern doors one on the north wall, Door 4, and the other directly across on the south wall, Door 8 (Fig. V-68). Both are 6 panel solid wood doors with 8-inch flat board casing. All hardware on these doors is new. Both doors have three-light transoms that date to 1894. The operating mechanisms on both transoms are not present. There are three typical doors in the Waiting Room, one on the east wall and two on the west wall. Doors 14 and 15 are as described in Rooms 3 and 4, and are located on the west wall. They are identical except Door 14 has a porcelain knob while Doors 13 and 15 have metal knobs, all have painted rectangular metal backplates. Door 13 has a small window, 5" high by 4 ½" wide, in the upper right panel of the door. There is evidence of modern locks above the historic knobs of all three doors.

There are three windows in the waiting room, Window B and K. They are type "B" windows. They have typical casing with the chair rail sill. Both windows have the pulley mechanism but the ropes are only evident on the east side of Window K. Both windows have curtain rod holders and remnants of finger pulls. Additionally, there is a double hung window, Window P, which serves as the ticket window (Fig. V-69) and is situated between the Waiting Room and the Ticket Office on the northern portion of the east wall. The bottom half of the window is covered in one-inch square wire grate while the top pane is painted white and has the words, "Ticket Office," painted in brown. Window P has the typical casing, however, there is a modern gray counter built into the sill, just above the chair rail.



Fig. V-69. Ticket Window. GWWO photo, 2004.

The north wall has a metal basket, signs, piping and an historic painted radiator.

On the south end of the east wall there is an area of type "C" beaded board. This section is 4'-0" by 8'-1" and is assumed to fill in the area where a doorway or cased opening once led to the hall between the Men's and Women's Waiting Rooms. The east wall has a speaker over Door 13; a tackboard, which is resting on the chair rail to the south of Door 13; an outlet, above the chair rail on the south side of the wall; a water fountain, floor mounted to the southern end of the wall; and an electric heater, wall mounted

towards the ceiling on the southern end of the wall. On the north end of the east wall, between Door 13 and Window P, is a chalk board.



Fig. V-70. Waiting room, west wall. GWWO photo, 2004.

The south wall has pipes that run east to west above the window and doorframes. There is a painted historic radiator under Window K. There is a metal electric box wall mounted between Window K and Door 8.

The west wall has type "B" beaded board beginning at 4'-3" and continuing north to the end of the wall (Fig. V-70). This wall was added in 1931, when the Ladies Room was moved to its current location.

Ticket Office – 06

The ceiling in the Ticket Office is type "A" beaded board running north and south. There is a hatch to the attic in the southwestern corner of the room. There are four 4'-0" double tube fluorescent lights running down the center of the room from north to south. Additionally there are cover plates for historic fixtures including a plate centered over the ticket window. There is a 4-inch infill in the ceiling, 4'-0" from the south wall, which runs from the east wall to the west wall. The infill is type "A" beaded board; however the beads do not align across the infill patch.



Fig. V-71. Ticket Office,south wall. GWWO photo, 2004.

The walls are type "A" beaded board. There are two infills of type "C" beaded board on the southern ends of the east and west walls which are approximately 4'-0" wide running from floor to ceiling. This is where the doorway or cased opening to the hallway between the waiting rooms once existed. There is also an infill on the east wall of a former ticket window, done in 1931. In its place is 3 ¼" wide V-groove planks. The cornice is type "A" and is evident on the north, east and west walls. There is no cornice on the south wall. The base is typical, minus the quarter round, and is intact throughout the room. There is no chair rail in the room.



Fig. V-72. Ticket Office, northwest corner. Newman photo, 2002.

There are two doors in the Ticket Office, one each on the east and west walls, Doors 12 and 13, respectively. Both doors are type "A" solid wood doors. Both doors have the typical casing. Both doors have painted metal knobs. Door 12 has a painted metal rectangular backplate and Door 13 has a polished brass rectangular backplate. Door 13 is as described in the Waiting Room, except as noted here: there is a sliding wood piece that works to cover the small window allowing control of visibility into and out of the room. There is a hook on the center stile. There are the remains of a dead bolt lock. Door 12 has a throw bolt and a surface mounted dead bolt lock.

There are four windows in the room, one on the south wall, Window J, and a set of three windows on the north wall that are collectively

known as Window C. The two outer windows are type "A," while the inner window and Window J are type "B." All windows have the typical casing with chair rail sills. All three windows comprising Window C have existing thumbpulls and locks. There are ropes in the pulley mechanisms in all but the east side of the east-side outer window. Window C was at one time a bay window, however, it was converted to its current condition in 1931.

There is a step back cabinet on the south end of the west wall. It is 1'-0" deep on the upper section and 1'-4" deep on the lower. There are two-two flat-panel doors on each section. The exterior is painted while the interior is varnished. There are five shelves approximately 6 inches apart, centered in the upper section and five shelves evenly spaced in the lower section. The rear of the cabinet is open and pushed up against the wall, thus the back of the cabinet is the wall.



Fig. V-73. Ticket Office, northeast corner, Newman photo, 2002.

There is an inset, wall-mounted cabinet to the south of Window P on the west wall. It is 6" above the modern counter and is 33" wide by 26" tall and has an exterior depth of 5". Its interior depth is 7 ½". It has a rolling shutter front and is divided into 24 differently divided compartments. The exterior is painted and the interior is varnished. It has two brass handles and nameplates on the lowest rail of the shutter front. In the center of the lowest rail of the shutter front is a decorative metal back-plate and keyhole on which it says "National Ticket Case Company."

There is a low, inset wall cabinet on the south side of Door 13 on the west wall. It is 3'-1" wide by 3'-6" high. On the exterior it is 1 ¼" out from the wall, on the interior it is 12 ½" deep. The cabinet has two beveled single panel doors, which are painted on the outside and varnished on the inside. There are four shelves on the inside that are evenly space at approximately 10" apart.

There are radiators below the type "B" windows on both the south and north walls, however they are of different eras. Along the east wall there is a porcelain sink, a soap dispenser and a mirrored medicine cabinet. There are 3 hooks of various ages on the south wall as well as a paper towel dispenser and a wood shelf. There is an inset electrical panel on the west door approximately one foot south of Door 13. There are three wall mounted metal boxes on the west wall.



Fig. V-74. Mechanical Room, northwest corner. Newman photo, 2002.

Mechanical Room (Original Women's Waiting Room)– 07

There is an exposed tray ceiling in the Mechanical Room made up of type "A" beaded board running east to west and chamfered framing with two edges and eight central beams. There is one beam replaced at the southwest corner. The beams are chamfered 6" from joints and up 12" from bottom.

The entire room has type "A" beaded boards on the walls. There is a type "C" beaded board infill at the south end of the west wall which is runs from the south wall for 4 feet and goes up 7 feet. The east wall has multiple infills, including a modified type "A" beaded board at the south end, which is 4'-0" wide and 7'-0" tall. This was the original entrance to the Ladies' Restroom.

There is a typical cornice on north, south and west walls. Although there is no cornice on the east wall, there is shadowed evidence that one once existed. There is no base or chair rail on the north, east or west walls. However, the base and chair rail are intact on the south wall. Additionally, there is shadowed evidence of a base and chair rail on the walls from which it is absent.

There are three type "A" solid wood doors, one each on the north, south and west walls, Doors 5, 7 and 12. Door 12 is as described in the Ticket Room. It has an historic metal knob and rectangular backplate and the keyhole side of a deadbolt lock. Doors 5 and 7 both have 3-light transoms with no operating mechanisms. Door 5 has a black metal knob and rectangular back plate with small rose drill holes from earlier knob hardware. Door 7 has a black porcelain knob with a black rectangular plate. Both doors have metal throw bolts above the knobs. Door 7 has a hydraulic closer. Both doors have typical casing however one upper medallion is missing from Door 7 and both are missing from Door 5. Door 5 is missing the trim from 5'-0" down and at its head.



Fig. V-75. Mechanical Room, southeast corner, Newman photo, 2002.

There are two type "B" windows in the room, one each on the north and south walls, Windows D and I. Both windows have typical casing but are missing the upper medallions. Window D is missing the head casing as well as the sill. There are boards nailed over Window D to cover up several broken panes.

There is a chimney on the east wall. This was installed in 1931 when another taller chimney was removed. There are infills on either side of the chimney of 1'-0" planks of wood. The chimney is built of brick and is 1'-9" square. There are two holes in the west side of the chimney, which are approximately 12" in diameter. One of these holes is open while the other has been cemented over.

Slightly east of center in the room is a pit, which is approximately 5'-0" deep. It is formed of poured concrete in 6" layers. There are massive timbers and pipes showing at the bottom half of the east wall of the pit. There is a set of wooden stairs leading down into the pit from the southern portion of the room. On the north wall of the pit is a doorway into a second pit. This second pit is the previous location of a coal bin and an oil tank. It ramps up from the low level of the pit to nearly floor level at the north wall.

The backside of the inset cupboard in the Ticket Office is exposed in the Boiler Room. This protrudes into the room approximately 6". South of the cupboard is a hook board. This board is 43 ½" off the old floor line, is 43" wide and 6 ¼" deep. There are hooks of multiple sizes located at different spots on the board. It can be assumed this was installed when this room was converted from the Women's Waiting Room into a mechanical room.

On the west end of the north wall is a metal cabinet with an angled top. South of it on the west wall is a telephone exchange, which juts out into the room. There are multiple wires coming into and out of the exchange. There is a telephone receiver on the southwest corner of the exchange and a light bulb on the southeast corner.



Fig. V-76. Relay Room, northeast corner, Newman photo, 2002.

Relay Room – 08

The ceiling in the Relay Room is made up of east to west running planks of wood of varying sizes. The ceiling in the alcoves is type "A" beaded board and runs north and south in the south alcove and east to west in the north alcove. The ceiling in the alcoves is approximately 2'-0" lower than the ceiling in the rest of the room.

All walls are type "A" beaded board. There is a door opening filled in with type "A" bead on the eastern wall, which is assumed to have been done in c1900 when the outside tower stairs were installed. An earlier window south of this was converted to the current door opening. The infill beaded board does not line up with the rest of the wall. There is also an infill on the south wall. The infill runs from the floor to approximately 2'-0" below the ceiling and extends over 34" from the alcove.

The crown throughout the room is a 1"x 6" flat board. The base is missing on the north wall and parts of the south and west walls. However, where it is evident, it is a 1" x 6" flat board. The north alcove is the only location with a typical base and chair rail.

There is one door in the room, Door 6, which leads in from the outside. It is a typical solid wood, single door. The casing is flat 1" x 6". There is a typical three-light transom without operating mechanics above the door. There is no historic hardware evident although there are holes where a knob and backplate would have



Fig. V-77. Relay Room, southwest corner, Newman photo, 2002. Inside wall of the earlier Women's Toilet Room is seen in the cream colored paint.



Fig. V-78. Relay Room, southeast corner, Newman photo, 2002.

been located which indicate their earlier presence. There is a metal strap, however there is no associated hardware.

There are four windows in the room. There is one type "B" window located on the north wall, Window F. The lower two panes of Window F are partially painted. There is one type "A" window on each of the east walls of the north and south alcoves, Windows H and E. All three windows have typical casing, however, Window F has a type "A" beaded board for a bottom sill while the other two windows have chair rail sills. There is one cracked pane in the upper section and one cracked pane in the lower section of Window F. There is a pulley mechanism for Window F, however there are no ropes. Windows H and E both have little of their hardware left. Both Windows H and E have tattered pull down curtains. There is a fourth window, Window G, located on the south wall. This window is unlike any other in the building. It is a single pane, top hinged window located on the upper portion of the wall. It has a 1" x 3" boxed casing. There is a metal strap attached to the bottom of the window.

The North Alcove of the Relay Room has the remains of a previous door or hallway on the west wall. There are two planks of wood dividing the doorway horizontally into three sections. There is no casing around this doorway. Across from the doorway there is a type "A" window. It also has a plank of wood nailed to the casing, bisecting it. From the top plank in the doorway to the plank over the window lies a wider plank of wood, presumably a shelf. The chair rail and base are intact in this section of the room, however both are coming off on the east wall.

There is an infill on the west wall of the south alcove. It covers what was once a doorway between the former Women's Room and the Women's Waiting Room, which is now the Boiler Room. It is filled with type "A" beaded board. The base in the south alcove is a simple

On the north wall, there are three pipes coming out of the floor, which then go into a wall mounted metal junction box and emerge from the top as one pipe. There is an historic electrical switch to the south of Door 6 on the east wall. There is a metal electrical box on the south wall. There are electrical boxes, cables and hoses on the west wall.

Structural System

Description

Roof Framing: The construction of the station's hip and gable roof consists of trussed-rafter framing, spaced at approximately 24" on centers, supporting plywood sheathing over nominal 1X8 wood plank decking. The roof members clear-span between the exterior wood stud walls. The roof pitch is approximately 7:12. The roof framing is of two configurations: Non-Planar and Planar.

a. Non-Planar – Opposing 3X8 (2¾"X7½" actual dimension) rafters meet at a 2X10 ridge board, and bear on the exterior wood stud walls. An offset 2X6 collar tie spans between the exterior walls, and is fastened to the sides of the rafters at their bearings. 3X8 outlookers, overlapped and "sistered" to the rafters, extend outward from the exterior walls to form the eaves. The outlookers are provided with intermediate support by a continuous 6X8 (5⅜"X7½" actual dimension) beam located 3'-3" from the walls, and cantilever an additional 2'-9" to the roof edge (Fig. V-79).

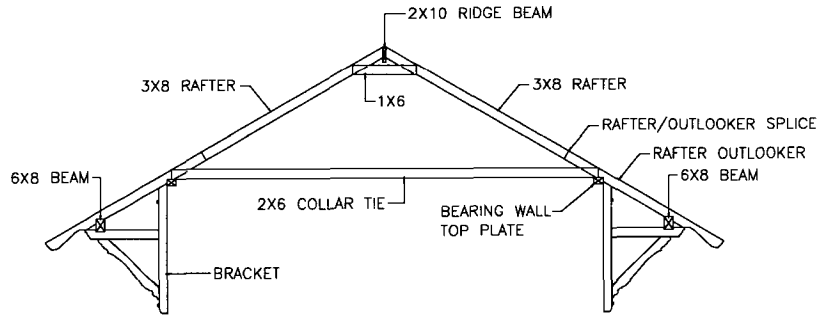


Fig. V-79. Non-Planer Roof Frame. Faisant drawing, 2004.

b. Planar – There are two major differences between the planar and non-planar configurations: 1) the collar ties in the planar system are located in the plane of the rafter, approximately 2'-6" above the bearing wall top plate, and are lap-joined to the rafter (Fig. V-80).

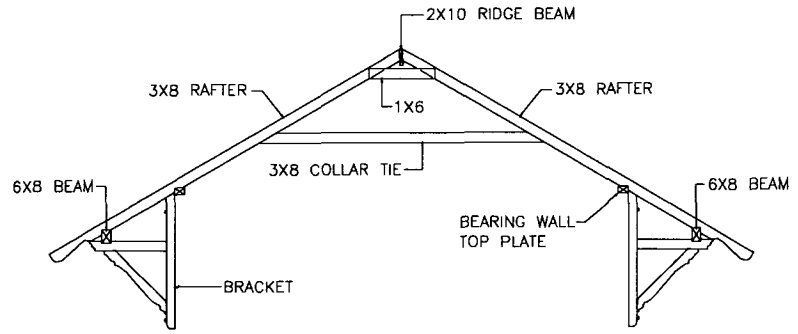


Fig. V-80. Planer Roof Frame. Faisant drawing, 2004.

At some time in the past, the collar ties above the Baggage Room were removed, leaving a small section still attached to the rafters. Hip beams and outlooker rafters form the north and south roof hips, below the roof vents (Fig. V-81).

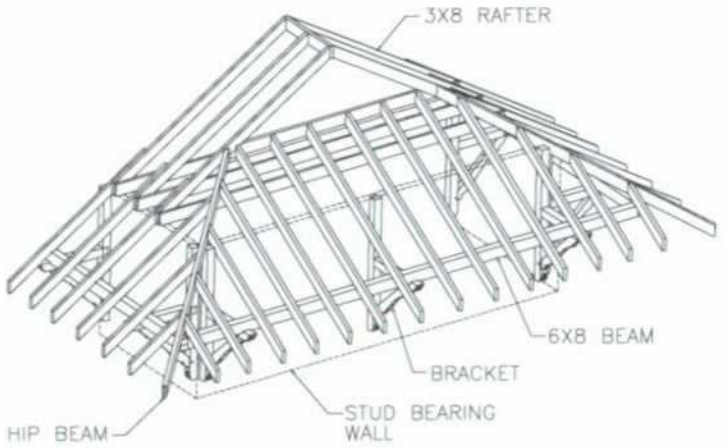


Fig. V-81. Roof hip framing. Detail from HAER drawings, 2002, noted by Faisant, 2004.

No significant deterioration of the framing was observed in the attic space; however, the presence of abandoned bee or wasp nests is extensive in the vicinity of the roof vents. Rafter outlookers and the edges of roof sheathing exhibit water damage and rot at several locations along the building perimeter (Figs. V-82 and 83). Damaged framing and sheathing has been previously repaired with plywood reinforcement.





Fig. V-82. Water damaged roof sheathing. Faisant photo, 2004.

Fig. V-83. Rotted rafter outlooker framing. Faisant photo, 2004.

Large wood brackets, spaced irregularly along the exterior walls, provide support for the exposed, continuous 6X8 perimeter roof beam (Fig. V-84). The bracket is comprised of 6X6 vertical and horizontal members, with a 4X4 knee brace. Both the horizontal member and knee brace are decoratively carved. The bracket is fastened to a 6X6 wall stud with two ¾" diameter bolts passing through the bracket vertical (Fig. V-85).



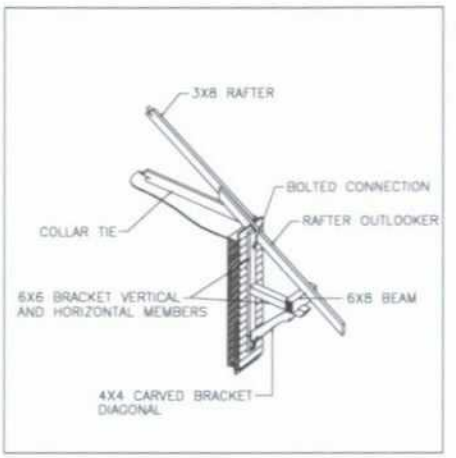


Fig. V-84. Wood Bracket. Faisant photo, 2004.
Fig. V-85. Wood bracket member sizes. HAER 2002 drawing, noted by Faisant, 2004.

What could be observed of the brackets appeared to be in good condition, with the exception of split members and separation of member joints at several locations.

Floor Framing: The typical floor framing is comprised of 3X12 joists (2¾" to 2⅞" X 11¼" to 11¾" actual dimensions), generally spaced at 16" on centers, with spacing at several locations ranging from 19" to 21" on centers. The original floor deck has been removed and replaced with ¾" plywood sheathing. The joists clear-span the building width and bear on a continuous wood crib foundation (Fig. V-86). Nominal 12"X12" beams were observed interspersed with the joists at nine locations, several occurring near interior stud partition walls (Fig. V-87).

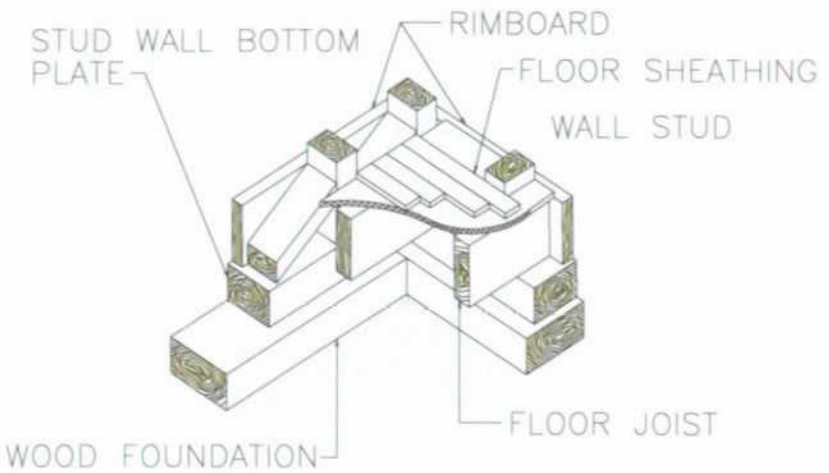


Fig. V-86. Wood foundation. HAER 2002 drawing, noted by Faisant, 2004.

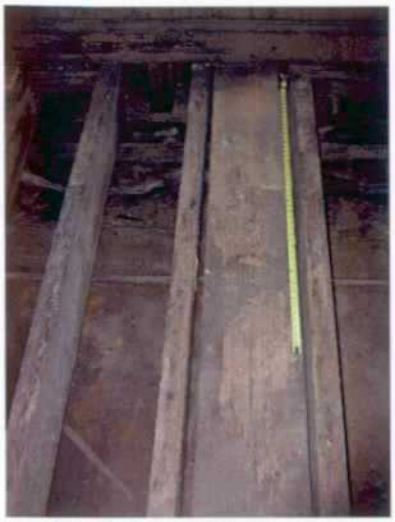


Fig. V-87. 12"x12" floor beam. Faisant photo, 2004.



Fig. V-88. Rotting at rimboard & joist bearing. Faisant photo, 2004.



Fig. V-89. Insect damage & stud rotting. Faisant photo, 2004.

Concrete retaining walls, which form the recessed floor at the old boiler location and coal storage area, support interrupted floor joists on the south side.

Rotted joist bearings at the exterior wood foundation, and insect damage to joists and 12X12 beams were observed at several locations. Water staining of the floor framing was noticed at many locations with accompanying dampness at several joists near the southeast corner of the building. Rotting of the rimboard was observed along all four sides of the building (Figs. V-87 and 88). Several joists have been notched to allow for the passage of piping or electrical conduit.

Exterior Walls: The exterior walls are framed with 2X6 (2¼"X5½" actual dimension) studs, spaced from 21" to 24" on centers. 6X6 studs occur at the bracket locations. A 4X6 (4"x5¾" actual dimension) continuous plate is located at the top of the studs and supports the roof framing. The studs are supported by a 7"X8½" continuous bottom plate, which bears on a wood foundation system (Fig. V-86). The exterior sheathing is nominal 1" thick random width boards oriented at an angle of 45° to the studs (Fig. V-90). Wood siding is attached to the diagonal sheathing.

Rotted wood was observed at the bottom portions of 6X6 and 2X6 studs at several locations, and frequently at the jack studs adjacent to door openings (Fig. V-89).

Foundation: The exterior walls are typically supported by a continuous 7"X11½" member in contact with the soil. At several locations, this member is discontinuous for several feet, requiring the wall plate to span the gap. The crawlspace height gradually increases in a west to east direction, and shims with large cribbing members were used to accommodate the increased height (Figs. V-88 and 91). The surface of the soil in the crawlspace appeared dry; although, surface fissures at several locations may indicate previous water infiltration or soil consolidation.

Settlement of the building is apparent in views of the elevations (Fig. V-92); however, long term deflection of the perimeter beams and outlookers, and possibly, misalignments resulting from the 1931 relocation, may be contributing factors to the vertical displacement.

Analysis



Fig. V-90. Exterior wood sheathing. Faisant photo, 2004.

Design Parameters: The following design parameters, determined in accordance with NFPA 5000 and ASCE 7-02, were used to calculate live, wind and snow loads:

Wind Loads:
Basic Wind Speed: **90 mph**
Exposure: **C**
Building Category: **II**
Importance Factor, **I**: **1.00**
Roof Angle: **±30°**
Adjustment Factor: **1.29**

Snow Loads:
Ground Snow Load, p_g: **30psf**
Exposure Factor, C_e: **0.9**
Thermal Factor, C_t : **1.1**
Importance Factor, **I**: **1.00**
Building Category: **II**
Roof Angle: **±30°, C_s=1.0**



Fig. V-91. Foundation with wood cribbing. Faisant photo, 2004.

Main Wind Force Resisting System:

WIND PRESSURES & ZONES				
Load Case	Horizontal Pressure (psf)			
	A	B	C	D
1	18.6	12.8	14.8	10.2
2	18.6	12.8	14.8	10.2

Load Case	Vertical Pressure (psf)			
	E	F	G	H
1	1.4	-11.4	0.5	-9.7
2	7.3	-5.5	6.2	-4.0

Load Case	Overhangs (psf)	
	E_{OH}	G_{OH}
1	-6.6	-7.5
2	-6.6	-7.5



Fig. V-92. Settlement at north building elevation. Faisant photo, 2004.

Components and Cladding:

WIND PRESSURES (psf)									
Component Location	Zone								
	1		2		3		4		5	
Roof	16.1	-16.5	16.1	-19.7	16.1	-19.7				
Overhang			-31.8		-31.8					
Wall							16.8	-18.5	16.8	-21.3

Snow Loading:
Balanced:
$P_f = 0.7C_eC_tIp_g = 0.7(0.9)(1.1)(1.00)(30) = 20.8$ psf

Unbalanced:
W = 17'-0"
$P_{unbal} = 1.5P_s/C_e = 1.5(20.8)/0.9 = 34.7$ psf

Attic Space:
Live Load = 10 psf (emergency access)

Floor Loading:
Typical Live Load = 100 psf

No. 2 Southern Yellow Pine will be assumed for the wood member species and grade, based on visual examination of the existing members and laboratory confirmation of the species.

Roof: Analysis of the planar and non-planar framing configurations uncovered an overstress condition in the 2X6 collar tie of the non-planar frame. The overstress is due to excessive bending under gravity loads. The frame will be strengthened with the addition of a vertical member, connected to the collar tie near the mid-span, and the ridge board above. New 3x8 collar ties will be installed, located at the same elevation as the tie in the planar frame. Missing collar ties will be similarly addressed. No additional, significant overstress was detected in the remaining members of either frame type.

The rafter to collar tie beam connection is by nailing only, at the non-planar frames, and by nailing through a lapped joint at the planar frames. The number of nails and their penetration at the connection varies. A preliminary analysis indicates that an axial force of 1150 lbs. and 1000 lbs. must be resisted at the joint for the non-planar and planar frames respectively. The connection will be with a reinforced prefabricated steel plate.

Supplementary, prefabricated steel connectors will be required to resist horizontal and vertical (uplift) reactions, due to wind loads, at the frame supports on bearing walls and perimeter 6X8 beams respectively. Additionally, new bolted connections will be required to resist uplift wind reactions at the 6X8 beam support on the exterior wall brackets, where existing bolts do not occur.

Rotted rafter outlookers will have to be reinforced or replaced, and members previously reinforced must be examined for the possibility of further deterioration. Rotted sheathing will be replaced.

Analysis of the exterior wood brackets has indicated an overstress condition at the mortise and tenon joints between the knee brace or diagonal member, and bracket vertical and horizontal members.. Reinforcement of the joint with steel plates will be required.

Floor: Results of the floor joist analysis indicate an excessive live load deflection of 1/205 of the span, or approximately 1¼ inch. The maximum allowable code mandated live load deflection is 1/360 of the span, or ¾ inch. Calculations indicate that the joist is stressed to 92% of its capacity. We recommend that an intermediate steel girder be introduced near the joist mid-span to increase load capacity and reduce deflection.

Joists with rotted bearings and insect damage will be reinforced with new wood members or replaced if the damage is too extensive. Rotted rimboard will be replaced. The extent of rimboard replacement will be determined after the exterior face has been exposed.

Existing joist bridging was observed at only a few locations. New bridging will be installed to increase joist stiffness and stability.

Exterior Wall: The exterior stud bearing walls have been analyzed for roof gravity loads alone and in combination with wind loads. The typical 2X6 studs have sufficient capacity. The 6X6 studs located at the exterior brackets are overstressed for both load conditions. The 6x6 studs will be stiffened by "sistering" new 4X6 members to each side of the member. Prefabricated connectors will be used to transmit uplift and horizontal forces to the foundation.

New studs will be installed adjacent to existing studs with rotted ends.

Foundation: A new foundation is proposed for the building exterior walls to provide long term stability. The geotechnical report recommends the use of a spread footing foundation, and removal and replacement of existing fill soils to a depth of 4'-0" and 2'-0" below the new interior pier footings and crawlspace slab respectively. Several shoring and underpinning schemes have been discussed and are illustrated in Appendix G of the report. The major considerations in the selection of a scheme are the proximity of the foundation excavation to the railroad tracks and the resources available in the region to perform the work.

Scheme 1A, with a crawlspace, appears to be the most practical option. A central, east-west spanning steel girder will provide the required intermediate support for the floor joists. The girder will be supported by new concrete foundations. Exterior masonry walls will

enclose the crawlspace and the crawlspace floor will be a conventional slab-on-grade.

The surrounding soil should be treated to protect against insect damage.

Evaluation of Integrity and Target Date for Restoration

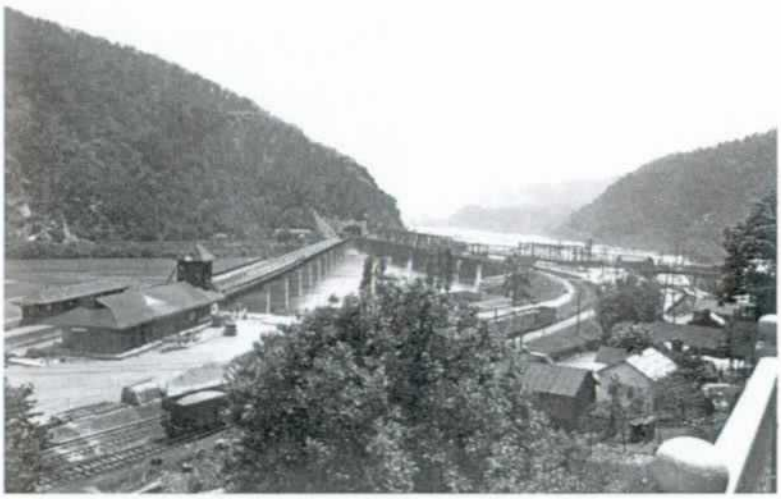


Fig. VI-1. Site photograph showing both old and new site, dated 6-9-31, taken shortly after the station relocation and prior to the completion of the building restoration and site work. HAFE Photo 130.

Relocated in 1931—thirty-seven years after its original construction—the Harpers Ferry Train Station lost portions of its original historic integrity. Many of the building's site relationships were altered with the move. The structure itself changed: two projecting bays, one of the two dormers, and the original chimney were removed. However, the station retained much. The relocation was within yards—walking distance and not miles—of its original position. The structure was reused for its original purpose at its new site, and the associated westbound waiting shelter was also relocated. Both buildings' relationships to the new tracks were maintained at the new site. Finally, the new site itself was lighted and fenced with elements that were first used at the original site, with replicas if not the actual relocated elements.



Fig. VI-2. East side of Station and Waiting Shelter, photograph dated 8-13-31, taken shortly after the station relocation and renovation. Henry Freeman collection.

Immediately after the move, the station possessed a high degree of historic association with its original construction. Virtually all of its original exterior elements survived the move except for the items

mentioned above. Original exterior materials were refurbished and placed in good working order. The station was repainted. Because of these circumstances, a decision to restore the exterior of the station back to the c1931 period immediately following the move optimizes the station's relationship with its current site, while highlighting as much of its original architecture as possible. In the years subsequent to the move, building fabric deteriorated, was demolished, or was replaced with modern substitutes. The tower and its exterior stair were removed. The slate roof was replaced with asphalt shingles. The pole gutters were removed. Doors were replaced. Designating a c1931 restoration date brings back these missing elements. The specific integrity of individual elements is discussed in the next section.

Proposed interior uses for the restored Train Station include passenger train waiting functions that continue a 110-year history. Because the space required today for this need is considerably reduced from past requirements, other interpretive functions are being designed for the interior, including uses by Harpers Ferry National Historical Park, and by the town of Harpers Ferry. While these proposed interior uses are compatible with the character of the building, their integration mandates some adjustments to the floor plan that existed at the c1931 restoration date. To successfully and fully reuse the station will require an interior rehabilitation approach, as opposed to an interior restoration. Character defining features, discussed below, will be retained; however, some functions—such as mechanical spaces and toilet rooms—will be positioned in locations that were not consistent with the 1931 post-move floor plans. This approach is in full compliance with the Secretary of the Interior Standards for rehabilitation.



Fig. VI-3. West side of Station and Waiting Shelter, post-1931 relocation. BORM collection.

Character Defining Features

The character-defining features of the Harpers Ferry Train Station can be subdivided into five general categories: (1) general site features, (2) overall massing elements of the station, (3) exterior materials and finishes, (4) significant exterior details, and (5) interior features. As the building aged, some of these features changed, some others were added, and yet others completely disappeared. The following discussion will identify the character-defining features of the building as originally constructed, and note how these features changed (through additions or deletions) through the period of building relocation in 1931, and up to the present time. An evaluation of these character-defining features extant today, and their current condition, form the basis for the evaluation of current integrity, and help justify the decisions to follow a course of Exterior Restoration to c1931, with Interior Rehabilitation.



Fig. VI-4. East side of Station and Waiting Shelter, post-1931 relocation. Henry Freeman collection.

General Site Characteristics:

The placement of the building on the site, with its long north side parallel to and within close proximity of the railroad tracks was an essential arrangement of the original design and a major character-defining feature. This relationship between building and tracks was maintained at the new site after the 1931 move, and exists today.

The relationship of the station to the tunnel under the tracks, to the tunnel stair enclosure on the south side of the tracks and the Westbound Waiting Shelter on the north side of the tracks are all significant site features. As an ensemble, these elements provide context for the station. The fact that the Northbound Waiting Shelter originally dates to 1898—within five years of the station itself, that it was expanded and improved upon with the advent of a "subway for safety" tunnel at the first site, that the entire shelter was relocated to the new site when the station was moved, and that a new tunnel was included at the new site to address the same safety concerns that were faced at the original site, all these facts together highlight the interrelationships and significance of these features. The south stair enclosure has been modified in recent times, including the removal of the east window, and the boarding up of other windows, but its basic mass, structure, and detailing are extant and serviceable. The tunnel at the current site survives. The Westbound Waiting Shelter has in recent times lost it's eastern-most four bays, but survives with one open bay and its two original enclosed bays. In this reduced massing, the structure maintains examples of virtually all of the wood detailing associated with the earlier, larger version. This detailing, being different from that found in the station itself, provides even greater reason to respect and preserve this element. The roof has lost its original standing seam metal—replaced in the recent past with asphalt shingle—but the design and detailing of the earlier roof are evident from photographs. This structure can and should be preserved. Work on



Fig. VI-5. Detail of east side of Northbound Waiting Shelter, post-1931 relocation. Henry Freeman collection.



Fig. VI-6. East side of site, dated 6-9-31, post-relocation. Outlines of building foundations are clearly evident. Henry Freeman collection.

these structures is currently beyond the scope of the restoration/ rehabilitation efforts being undertaken with the Station itself.

Site lighting and railings were a significant character-defining feature at the original site and also at the relocation site. Interestingly, the elements used at the original site, the gooseneck site-lighting fixtures and the pipe-rail perimeter railings, were of design and detail also used at the later site. Parts of the railing system remain at the current site, and replacement component pieces can be provided to restore this feature. Only a few examples of the lighting bases remain, and none of the gooseneck fixtures themselves. Extant photographic evidence can inform the design and detail of replacement fixtures that should be provided.

One final significant character-defining aspect of the site was the landscape treatment east of the building. The use of low grasses and/or groundcovers and the outline of archeological remains of building foundations provided not only a more open view of the surroundings, including the station, but also a subtle but meaningful interpretative function. This adjacent landscape should be restored to the c1931 character.

Exterior Building Massing Elements:

The east tower with its pyramidal roof constituted perhaps the most significant of the character-defining features of the Station itself. The tower not only provided a "presence" for the building when seen from distance, but also fulfilled important functions associated with the railroad's operation. With the removal of the tower in the 1950s, the building lost a significant element. Due to the abundance of records that document the construction and detailing of the tower, however, including 1931 B&O architectural drawings and a series of photographs that date between 1895 and the 1950s, the tower can be accurately reconstructed. Although often considered the least favored approach within the Secretary of Interior Standards for the Treatment of Historic Properties, this approach is favored when the missing features are in fact character-defining, are part of the restoration target period, and are capable of being reconstructed with accurate documentation. All circumstances exist in this case.



Fig. VI-7. Detail of the station tower seen from the southeast, dated 8-13-31, post-relocation. Henry Freeman collection.

The roof massing over the one-story station, consisting of a gable-and-clipped-hip, was and remains a character-defining feature. The gracious overhangs of this roof provided shelter from the elements while patrons waited for the train on the north side of the station, or for land-based transportation on the south side. The materials and detailing of the roof were also character-defining, and are discussed later.

The bay projections off of the north and south sides of the main station, were character-defining massing elements of the original 1894 building. They interrupted the basic rectangular form of the



Fig. VI-8. Station seen from the southwest, pre-1913, showing the south side bay and dormer. Henry Freeman collection.

station and provided a level of interest and proportion not otherwise attained. Both these elements were removed prior to the 1931 relocation, probably due to the added difficulty (and cost) of moving them intact, and due to the fact that the building could function equally well without the space these bays provided. If the intent for the restoration project were to target the year 1895 for the period of significance, these bay elements should be reconstructed. However, the site that the building occupies today is the site of the 1931 relocation. A logical choice of a restoration project, therefore, is to provide an exterior restoration commensurate with the status of the station immediately after the building's 1931 relocation. As such, with these elements never part of the exterior at the new site, they lost their character-defining status.

The roof dormers located above the bay projections also formed character-defining massing components of the roof. The dormer over the men's room was removed prior to relocation and was never associated with the massing of the building at the new site. The dormer over the ticket office, however, existed at the new site until the 1950s. Although lost now, it's location is documented clearly in photographs of the extant conditions of the roof framing, as well as through the 1931 B&O drawings of the building. This element should be reconstructed.



Fig. VI-9. Detail of tower chimney, seen from the south, c1915. Henry Freeman collection.

The chimney on the west side of the tower originally was a fairly massive brick shaft with a highly corbelled top. This chimney is documented in both early photographs and in the 1931 B&O drawings of the building. Although not clearly indicated within these drawings to be removed, this chimney and the associated fireplace below in the Women's Waiting Room were demolished prior to the building relocation. A much slimmer, 2'-8" x 2'-8" chimney—with a single corbelled brick course projecting out approximately 1" and located three courses from the top—was built in the location of the older chimney, and served as a flue for the furnace. Although not a significant character-defining feature, this replacement chimney existed until the tower was removed. It was then reduced in height to a point below the single corbel. As a part of the tower reconstruction, the chimney that sat adjacent to it following the move should be reconstructed.

The exterior tower stairs were a character-defining massing element until they were removed with the tower. When the tower is reconstructed, these stairs should be reconstructed.

Exterior Materials and Finishes

The slate used on the roof was a significant, character defining material. The current use of asphalt shingles diminishes the sense of solidity and permanence that the original station, with its slate, conveyed. The detailing of the slate is evident in early photographs and the 1931 B&O drawings. These include use of the Boston hip at



Fig. VI-10. Detail of the station seen from the east, dated 8-13-31, post-relocation, showing the character-defining materials and details, including the slate roof, wood siding, pole gutter, and paint colors. Henry Freeman collection.

the hips, and the use of a roll and apron flashing at the ridge. Examples of the original slate exist at the edge of the clipped hip, used as a siding detail. Although currently covered with paint, these slates—following cleaning—can inform the selection of the replacement slate color.

The wood siding, with its strongly articulated and closely spaced horizontal lines, is perhaps the most significant of the character defining materials used on the station. This material still exists and with some attention and care, can be maintained in place. The greatest damage to the siding occurred in 1986, when the B&O sand-blasted the building during a repainting episode. Besides removing the previous paint layers, the invasive technique removed the softer outer surfaces of the wood, leaving a pronounced graining pattern to the siding. Options for restoring a smoother, more uniform surface to the siding have been completed on samples in the laboratory, and the most favored option has been tried successfully on a test area, in-situ, on the building. Refer to Appendix E for details of these studies and recommendations. Band sanding the ridged surfaces down to a more uniform level is recommended, followed by application of new primer and finish paint coats. Limited areas needing epoxy fill are also anticipated.

The exterior paint colors associated with time immediately following the 1931 relocation are character-defining features for that period. These colors have been researched and documented (see Appendix F) and should be re-introduced during the restoration.

Exterior Details

One of the most striking and seldom encountered details of the building was the use of the "pole gutter" at the edge of the roof. Especially curious and uncommon is the use of exposed shims supporting the underside of the pole board. The entire detail was eliminated when the building was re-roofed with asphalt shingles. Examples of this detail have been located in the literature, and together with the extant photographs, the detail can and should be reconstructed.

The current lack of guttering has resulted in additional water damage and ponding surrounding the foundations of the building. These deficiencies will be corrected with the reintroduction of the gutters and channeling of the roof water through the six downspout collector boxes. Two of these six boxes remain, and the other four should be replicated to match those that exist.

The carved and ornamented exposed roof brackets create a level of interest and rhythm at the underside of the roof that is character-defining. These elements should be maintained. Some of the brackets have already been replaced, with construction not matching the originals in detail. These should be removed and replaced with



Fig. VI-11. Detail of the station brackets, south side, looking west, dated 2003. The closest bracket with the double diagonal strut is an anomaly, and part of the roof reconfiguration that occurred following the tower removal in c1950. A typical four-panel door and transom are also shown on the station's east wall. HAER photograph: WV86-10.

pieces that match the originals. Additionally several of the original brackets—or portions of them—are expected to require consolidation or replacement. In all the bracket work, construction and detailing should match the originals.

The double-hung six-over-two wood windows, with their distinctive and uncommon muntin arrangement, form a character-defining feature of the station. The openings and their detailing exist in reasonably good repair. These features should be preserved, and restored where necessary.

The original four-paneled doors to the station, with four sets of double-doors and five single-door openings, and all with their transoms, are character defining. Two key door-openings have been in-filled with inappropriate, narrower, 6-panel units, resulting in changes to the head and jamb casings as well as to the doors themselves. These doors, on the north and south side of the Men's Waiting Room, should be removed and replaced with units that match the other doors. Door and window hardware is considered character-defining, and is discussed with the interior features.

Tower awnings were clearly evident and in use both prior to and following the building relocation. They appear to have been removed by the 1940s, and were not replaced. These projecting canvas shades added a high degree of visual detail to the tower, as well as solar control, and as such can be considered important character-defining features. Their reproduction and incorporation into the tower recreation is recommended.

Interior Features

Because the reuse of the Harpers Ferry Train Station will involve several new uses, the interior spaces cannot be fully restored to their c1931 condition. The approach that is recommended is one of rehabilitation, which allows adaptation for new uses, while respecting and preserving the character defining elements.

Perhaps the most striking and important feature of the interior arrangement of the station was the gambrel ceiling found in the two major spaces, the original men's and women's waiting areas. These ceilings were highly detailed, with chamfered beams supporting exposed beaded board decking, and edged with a thoughtfully detailed wood cornice. The majority of these ceilings remains in both spaces, and requires preservation in order to bring them back to a condition that existed within the station in c1931.

Beaded board walls and ceilings—of three varieties—found throughout the interior are character-defining, and are important in helping to define not only the original construction, but also the

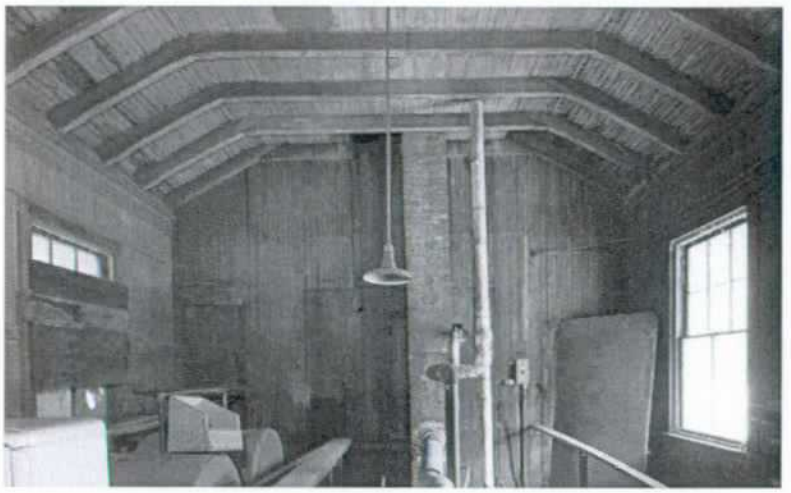


Fig. VI-12. Detail of the station interior, east side of current mechanical room, original Women's Waiting Room, dated 2003. The character-defining gambrel ceiling volume, the beaded board, the window muntin pattern , and the pendant lighting are all evident. HAER photograph: WV86-30.

changes that were required when the "Subway for Safety" was introduced c1913, and when the building was moved in 1931. Portions of these walls may need to be removed during the renovations in order to provide more insulation to the exterior walls of the station. Care should be taken during this process, and all of the beaded boards should be reinstalled in the same locations that they currently occupy.

Wood floors and sub-floors throughout the facility were removed in 2003, in a HAZMAT abatement project. Samples were retained, packaged and are currently stored in the Relay room of the Station. New ¾" plywood subfloors should be covered with ¾" tongue-and-grooved finish floors that match the original in detailing and stain finish.

Paint colors from the interior are currently being investigated and documented by Judi Q. Sullivan, Architectural Conservator, of the Northeast Regional Office of the National Park Service. The color schemes that existed in the main rooms during the c1931 period should be reintroduced as part of the proposed interior rehabilitation. When the paint study is completed, it should be added to Appendix F of this report.

Door and window hardware is currently is a state of general disrepair, with original components distributed throughout, but with a great deal of modern replacement hardware also evident. Although perhaps not a major character-defining element of the station, the hardware helps to connote a time period to all those who use and/or study the building. To that end, the components of the hardware that were original to the building prior to and up to c1931 should be refurbished and reused where practicable. Replacement hardware to supplement the original pieces should match existing where possible.

A significant character-defining element on the interior that is no longer extant is fireplace that was located on the east wall of the

women's waiting room. Although no photographs of this feature have yet been uncovered, the profile was carefully drawn and included on the B&O drawings made for the 1931 relocation. From these documents, and from physical evidence that remains in the beaded boards adjacent to the original location, the fireplace can be accurately reconstructed.

A minor anomaly will result with the reconstruction of this fireplace. The feature was eliminated prior to the move and its external chimney demolished. The chimney was replaced with a smaller one immediately after the move. The final renovated station will have an exterior restoration to c1931, with an interior rehabilitation. A pre-1931 interior fireplace will be married to an exterior post-1931 chimney. The design approach, which undertakes an exterior restoration while, at the same time, pursues an interior rehabilitation, typically tolerates these kinds of anomalies.

Remnants of lighting systems that were in place in the building during the 1931 relocation exist. These simple pendant metal reflector lamps should be reused or replicated in the interior rehabilitation, and supplemented if necessary with additional pendants. If additional lighting is necessary in some spaces, consideration should be given to the use of indirect lighting fixtures that are visually non-intrusive. Proposed exhibits will also need modern supplemental lighting.

Steam radiators heated the station after the move. No cooling system existed. The radiators, while creating a visual statement within the spaces, are not considered character-defining elements. Most were relocated to new locations during the renovations associated with the move. Going forward, their retention does not facilitate optimal use of the spaces. Since ductwork and air-handling louvers will have to be introduced in order to provide cooling for the building, and since these ducts could also provide for the heating, the recommendation to abandon (demolish) the radiators is put forth.

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Alternatives for Treatment

Synopsis of Alternatives

Below is a synopsis of the Alternatives considered during the VA:

The no-action alternative is continued **preservation maintenance** of the historic property to maintain the existing integrity and character of the historic structure by arresting or retarding deterioration caused by natural forces and normal use. Work, including preliminary measures to protect and stabilize the property focuses on the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. Preservation can include limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional.

Action alternatives are **rehabilitations** of the historic property. Character-defining features would be protected and maintained, however existing historic fabric has become damaged or deteriorated over time and, as a result, more repair and replacement would be required. *Secretary of Interior Standards for the Treatment of Historic Properties* allow replacement of extensively deteriorated, damaged, or missing features using either traditional or substitute materials. Rehabilitation would allow an opportunity to make possible an efficient contemporary use through alterations and additions.

Action alternatives include some elements of **restoration** consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to allow the process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of removing features from other periods in history and reconstructing missing features from the restoration period.

Five alternatives were evaluated in this Value Analysis. These alternatives are:

- **Alternative A** continued management action. The no-action alternative would be continued preservation maintenance or minimum rehabilitation of the historic property to arrest or retard deterioration caused by natural forces and normal use. Work, including preliminary measures to protect and stabilize the property would focus on ongoing maintenance and repair of materials and features and could include limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code required work to make the property functional.

- **Alternative A+** rehabilitation and some restoration of exterior elements to the building's 1950 appearance. The station would be rehabilitated to its 1950 appearance after the second-story tower and south dormer were removed and the roof was patched and covered with asphalt shingles. The interior would be rehabilitated to allow compatible contemporary use. Alternative A+ was developed during the value analysis to explore rehabilitating the building to adaptive contemporary use, while retaining the appearance the building has had for the past 50 years.

- **Alternative B** Rehabilitation of the station with restoration of some exterior elements to the post-move 1931 appearance. Rehabilitation of the interior for adaptive contemporary use. During the value analysis this alternative was used to explore different floor plans and restroom configurations. The following restroom variations were considered: (1) two single-use ADA accessible restrooms; (2) men and women two-stall non ADA accessible and one unisex ADA accessible restrooms; (3) men and women two-stall ADA accessible restrooms.

- **Alternative C** Rehabilitation of the station with restoration of exterior elements to the building's pre-move 1890s appearance. Rehabilitation of the interior for adaptive reuse. This alternative would replace the north and south bay window bump-outs and the south dormer which were not present on the structure at its present (1931) location. These restorations would result in a diminution or loss of the association of the historic property with its location. Alternative C also has property ownership issues in restoring bay window bump-outs outside of the property owned by NPS.

- **Alternative D** Rehabilitation of the station with restoration of some exterior elements to the post-move 1931 appearance. Rehabilitation of the interior for adaptive contemporary use. ADA compliant men and women restrooms at the west end of the building.

A sixth alternative (Alternative E) was developed but not carried through the VA study. This alternative consists of the rehabilitation of the depot to pre-move 1890s appearance with an interior reconfigured for adaptive reuse. This alternative would alter the floor plan by removing principal walls and partitions to create a new interior appearance. Alternative E shares the same property ownership issues as Alternative C in restoring bay window bump-outs outside of the property owned by NPS. Alternative E was rejected and not carried forward through the value analysis because it combines an interior floor plan that is not in character with the exterior rehabilitation.

After the Value Analysis of Alternatives conducted April 29 and 30, 2003 at Harpers Ferry, the NPS is proceeding with an environmental assessment of three (3) action alternatives and one (1) no-action alternative. The alternatives are:

- **No Action Alternative** Continued management action would include minimum rehabilitation of the structure to make the property functional
- **Alternative A** Rehabilitation to 1950s appearance with interior floor plan upgrades.
- **Alternative C** Rehabilitation to pre-move 1894 appearance with restoration of external features.
- **Alternative D** Rehabilitation to post-move 1931 appearance with restoration of some external features.

The chart on the following pages provides more details regarding each Rehabilitation Alternative.

Rehabilitation Alternatives Table

Harpers Ferry Train Station Rehabilitation Alternatives					
Alternative A *No-Action: Continued Preservation Maintenance*	**Alternative A+** *Maintain exterior elements to 1950 appearance. Rehabilitation of interior to allow compatible contemporary use*	**Alternative B** *Post move appearance restored to 1931 appearance. Interior adaptive reuse*	**Alternative C** *Pre move restored to 1894 appearance*	**Alternative D** *Post Move restored to 1931 appearance*	**Alternative E** *Pre-move restored to 1894 appearance*
▪ Continued maintenance activities needed to preserve the structure ▪ No rehabilitation or restoration activities would occur	▪ Full Basement ▪ Fire Suppression ▪ ADA compliant ▪ Interior spaces upgraded ▪ Restrooms (men / women) ▪ Unisex restroom ▪ No interior hallway	▪ Rehabilitation with some exterior elements restored ▪ Full Basement ▪ Fire Suppression ▪ ADA compliant ▪ Interior compartmentalized with 1890s interior feeling ▪ Restrooms (men / women) ▪ Unisex restroom ▪ No interior hallway	▪ Rehabilitation with exterior elements restored ▪ Full Basement ▪ Fire Suppression ▪ ADA compliant ▪ Hallway restored ▪ Restrooms (ADA accessible men /women) ▪ No unisex restroom ▪ Interior hallway restored	▪ Rehabilitation with some exterior elements restored ▪ Full Basement ▪ Fire Suppression ▪ ADA compliant restrooms located at west end of building ▪ Open floor plan creating a large open town / waiting room ▪ Acknowledge interior subway wall in adaptive reuse	▪ Rehabilitation with some exterior elements restored ▪ Full Basement ▪ Fire Suppression ▪ ADA compliant ▪ Restrooms located at west end of building ▪ Open floor plan creating a large open town / waiting room
▪ Stabilization including structural reinforcement (concrete foundation) ▪ No basement ▪ Two-foot crawl space with radon slab	▪ Basement excavation	▪ Basement excavation	▪ Basement excavation	▪ Basement excavation	▪ Basement excavation

Harpers Ferry Train Station Rehabilitation Alternatives					
Alternative A *No-Action: Continued Preservation Maintenance*	**Alternative A+** *Maintain exterior elements to 1950 appearance. Rehabilitation of interior to allow compatible contemporary use*	**Alternative B** *Post move appearance restored to 1931 appearance. Interior adaptive reuse*	**Alternative C** *Pre move restored to 1894 appearance*	**Alternative D** *Post Move restored to 1931 appearance*	**Alternative E** *Pre-move restored to 1894 appearance*
▪ Limited upgrade of utilities (e.g. water sewer) to meet code and to make the property functional. ▪ Wherever possible, exterior utility components placed within previously disturbed areas.	▪ Upgraded utilities (e.g. water, sewer, electricity). ▪ Wherever possible, exterior utility components placed within previously disturbed areas.	▪ Upgraded utilities (e.g. water, sewer, electricity) designed and installed consistent with Secretary's Standards. ▪ Wherever possible, exterior utility components placed within previously disturbed areas.	▪ Upgraded utilities (e.g. water, sewer, electricity) designed and installed consistent with Secretary's Standards. ▪ Wherever possible, exterior utility components placed within previously disturbed areas	▪ Upgraded utilities (e.g. water, sewer, electricity) designed and installed consistent with Secretary's Standards. ▪ Wherever possible, exterior utility components placed within previously disturbed areas	▪ Upgraded utilities (e.g. water, sewer, electricity) designed and installed consistent with Secretary's Standards. ▪ Wherever possible, exterior utility components placed within previously disturbed areas
▪ Maintenance replacement of deteriorated existing asphalt roof shingles to protect the building from water damage.	▪ Replacement in kind of asphalt shingles	▪ Slate roof restored. ▪ Decorative brackets beneath overhang restored.	▪ Slate roof restored. ▪ Decorative brackets beneath overhang restored.	▪ Slate roof restored. ▪ Decorative brackets beneath overhang restored.	▪ Slate roof restored. ▪ Decorative brackets beneath overhang restored
▪ Fire protection installed to meet code requirements and consistent with Secretary of the Interior's Standards for the Treatment of Historic Properties ▪ No fire suppression	▪ Fire protection installed to meet code requirements and consistent with Secretary of the Interior's Standards for the Treatment of Historic Properties ▪ Fire suppression	▪ Fire protection installed to meet code requirements and consistent with Secretary of the Interior's Standards for the Treatment of Historic Properties ▪ Fire suppression	▪ Fire protection installed to meet code requirements and consistent with Secretary of the Interior's Standards for the Treatment of Historic Properties ▪ Fire suppression	▪ Fire protection installed to meet code requirements and consistent with Secretary of the Interior's Standards for the Treatment of Historic Properties ▪ Fire suppression	▪ Fire protection installed to meet code requirements and consistent with Secretary of the Interior's Standards for the Treatment of Historic Properties ▪ Fire suppression

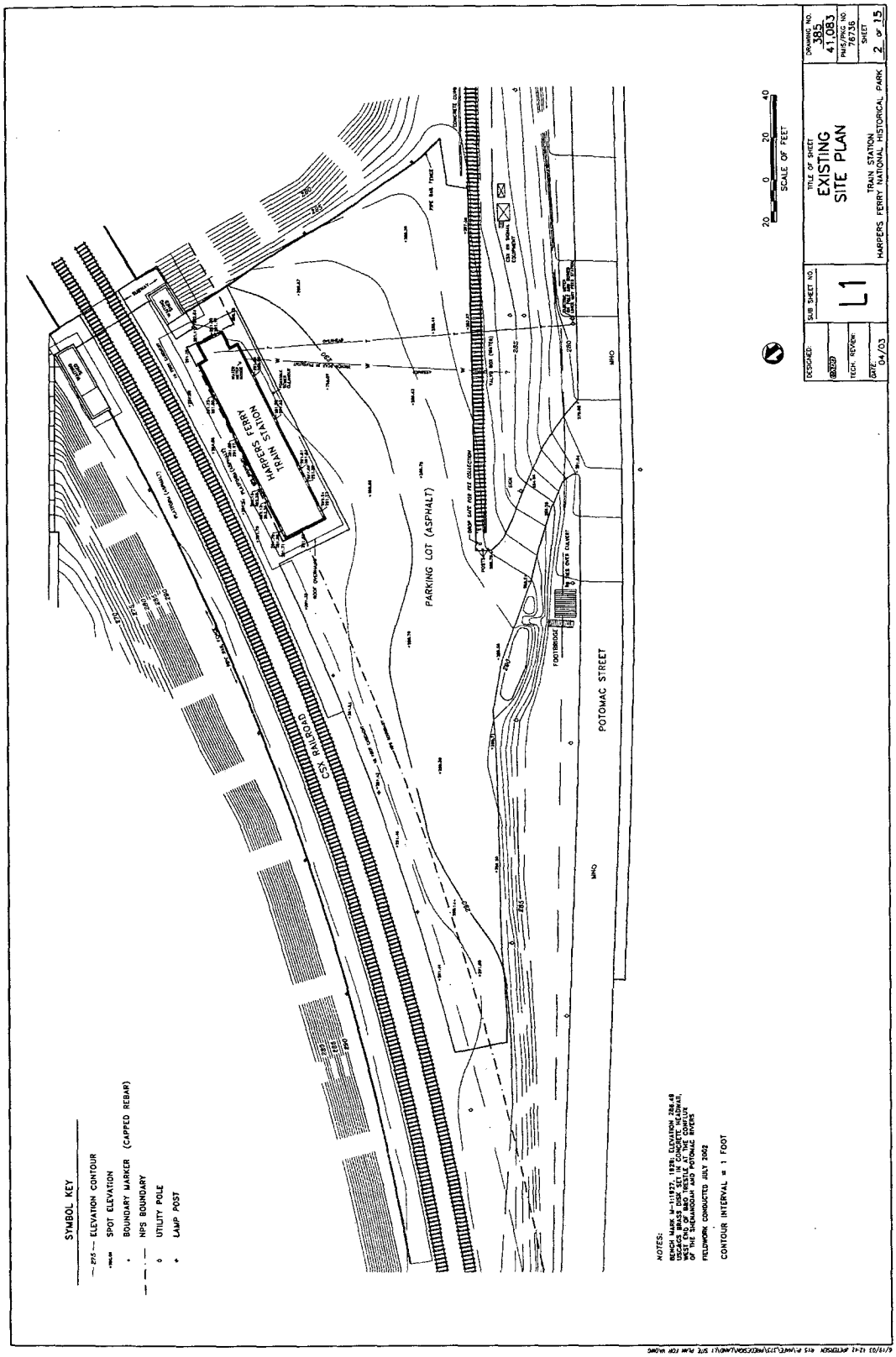
Harpers Ferry Train Station Rehabilitation Alternatives					
Alternative A *No-Action: Continued Preservation Maintenance*	**Alternative A+** *Maintain exterior elements to 1950 appearance. Rehabilitation of interior to allow compatible contemporary use*	**Alternative B** *Post move appearance restored to 1931 appearance. Interior adaptive reuse*	**Alternative C** *Pre move restored to 1894 appearance*	**Alternative D** *Post Move restored to 1931 appearance*	**Alternative E** *Pre-move restored to 1894 appearance*
▪ Exterior building envelope (e.g. siding, doors, windows) treated to repair and protect the building from weathering and to make the structure weather-tight. ▪ Some window frame repair	▪ Exterior building envelope (e.g. siding, doors, windows) repaired with deteriorated features repaired or replaced consistent with the Secretary Standard's for the Treatment of Historic Properties. ▪ 1950s exterior appearance.	▪ Exterior building envelope (e.g. siding, doors, windows) repaired with deteriorated features repaired or replaced consistent with Secretary's Standards. ▪ 1931 exterior appearance	▪ Exterior building envelope (e.g. siding, doors, windows) repaired with deteriorated features repaired or replaced consistent with Secretary's Standards. ▪ Some exterior features restored to 1890s	▪ Exterior building envelope (e.g. siding, doors, windows) repaired with deteriorated features repaired or replaced consistent with Secretary's Standards. ▪ Some exterior features restored to 1931	▪ Exterior building envelope (e.g. siding, doors, windows) repaired with deteriorated features repaired or replaced consistent with Secretary's Standards. ▪ Some exterior features restored to 1890s
▪ Maintenance installation half-round gutters and downspouts, and underground drain system to prevent moisture and water penetration.	▪ Half-round gutters and downspouts and underground drain system.	▪ Pole gutters with box-protected downspouts restored.	▪ Pole gutters with box-protected downspouts restored.	▪ Pole gutters with box-protected downspouts restored.	▪ Pole gutters with box-protected downspouts restored.
▪ Existing roof connection to subway shelter maintained. ▪ Some repairs to subway shelter as required	▪ Roof connection to subway replaced in kind (asphalt shingles)	▪ Slate roof connection to subway restored	▪ Slate roof connection to subway removed	▪ Slate roof connection to subway restored	▪ Slate roof connection to subway removed
▪ Existing shortened brick chimney stabilized and maintained.	▪ Shortened brick chimney preserved and maintained	▪ Brick chimney extended	▪ Brick chimney with corbelled cap restored	▪ Brick chimney extended to accommodate restored tower	▪ Brick chimney extended to accommodate restored tower

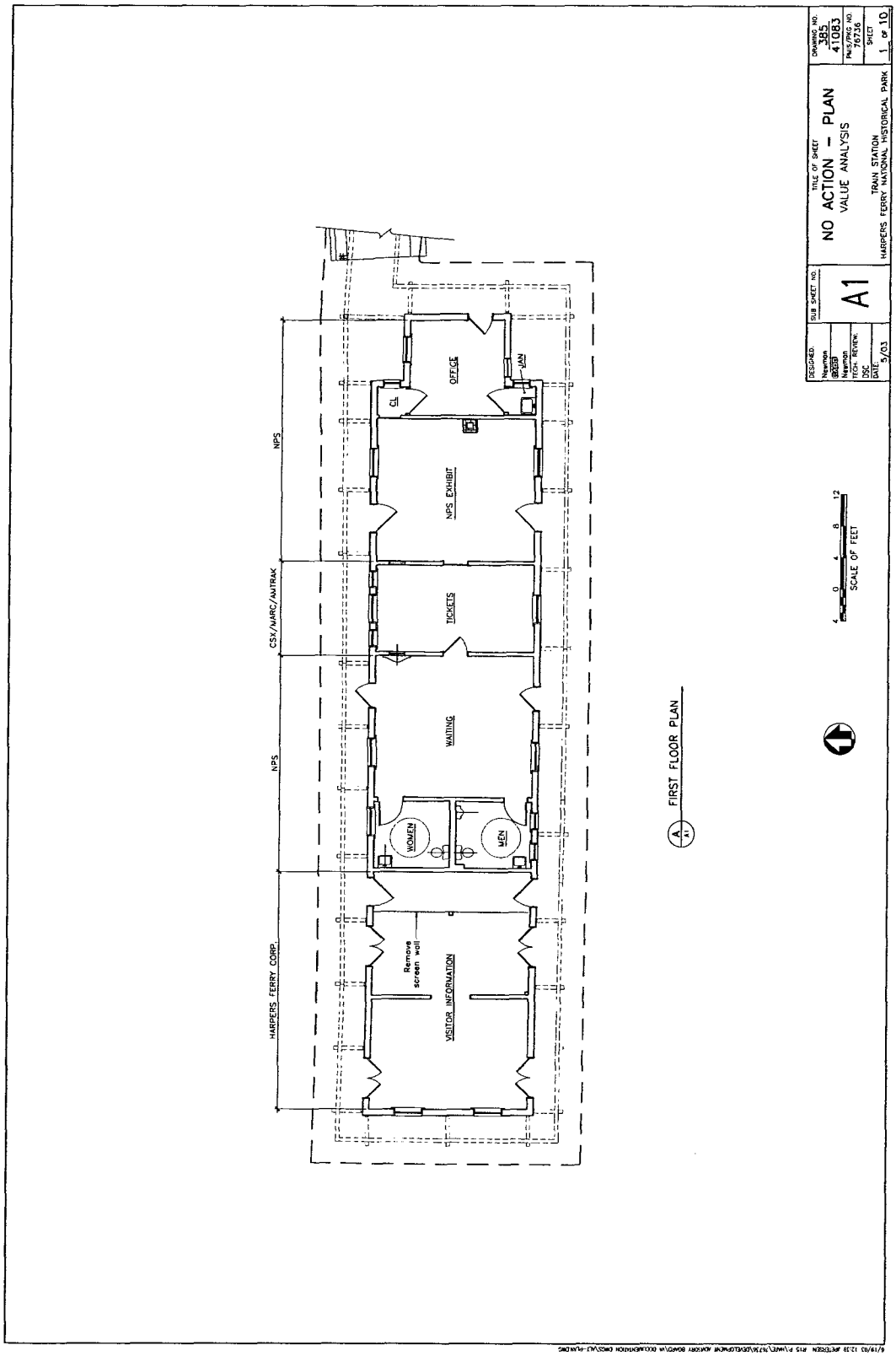
Harpers Ferry Train Station Rehabilitation Alternatives					
Alternative A *No-Action: Continued Preservation Maintenance*	**Alternative A+** *Maintain exterior elements to 1950 appearance. Rehabilitation of interior to allow compatible contemporary use*	**Alternative B** *Post move appearance restored to 1931 appearance. Interior adaptive reuse*	**Alternative C** *Pre move restored to 1894 appearance*	**Alternative D** *Post Move restored to 1931 appearance*	**Alternative E** *Pre-move restored to 1894 appearance*
▪ Railing or other barrier installed to protect users from train traffic (safety)	▪ Railing or other barrier installed for visitor safety.	▪ Railing or other barrier installed for visitor safety.	▪ Railing or other barrier installed for visitor safety.	▪ Railing or other barrier installed for visitor safety.	▪ Railing or other barrier installed for visitor safety.
▪ Repair and maintain asphalt paving adjacent to the building	▪ Repair and maintain asphalt paving adjacent to the building	▪ Curb (Harpers Ferry shale?) and crushed rock bluestone platform restored.	▪ Curb (Harpers Ferry shale?) and crushed rock bluestone platform restored.	▪ Curb (Harpers Ferry shale?) and crushed rock bluestone platform restored.	▪ Curb (Harpers Ferry shale?) and crushed rock bluestone platform restored.
▪ No tower.	▪ No tower	▪ Tower with pyramidal slate roof and exterior stair restored	▪ Tower with pyramidal slate roof and exterior stair restored	▪ Tower with pyramidal slate roof and exterior stair restored	▪ Tower with pyramidal slate roof and exterior stair restored
▪ No north elevation dormer	▪ No north elevation dormer	▪ North elevation dormer restored.	▪ North elevation dormer restored	▪ North elevation dormer restored	▪ North elevation dormer restored
▪ No south elevation dormer	▪ No south elevation dormer	▪ No south elevation dormer	▪ South elevation dormer restored	▪ No south elevation dormer	▪ South elevation dormer restored
▪ Hazardous materials abated (health and safety)	▪ Hazardous materials abated (health and safety)	▪ Hazardous materials abated (health and safety)	▪ Hazardous materials abated (health and safety)	▪ Hazardous materials abated (health and safety)	▪ Hazardous materials abated (health and safety)
▪ Maintain sanitary facilities within footprint of existing restrooms.	▪ Men / Women restrooms. ▪ One ADA accessible unisex restroom	▪ restroom options considered ▪ :2 single-use ADA ▪ men & women 2-stall one ADA unisex ▪ men & women 2-stall ADA	▪ Men / Women ADA accessible. Move subway wall to accommodate ▪ No unisex restroom	▪ Men / Women ADA accessible restrooms at west end of building	▪ Men / Women restrooms ▪ One ADA accessible unisex restroom
▪ Not ADA accessible	▪ ADA accessible	▪ ADA accessible	▪ ADA accessible	▪ ADA accessible	▪ ADA accessible

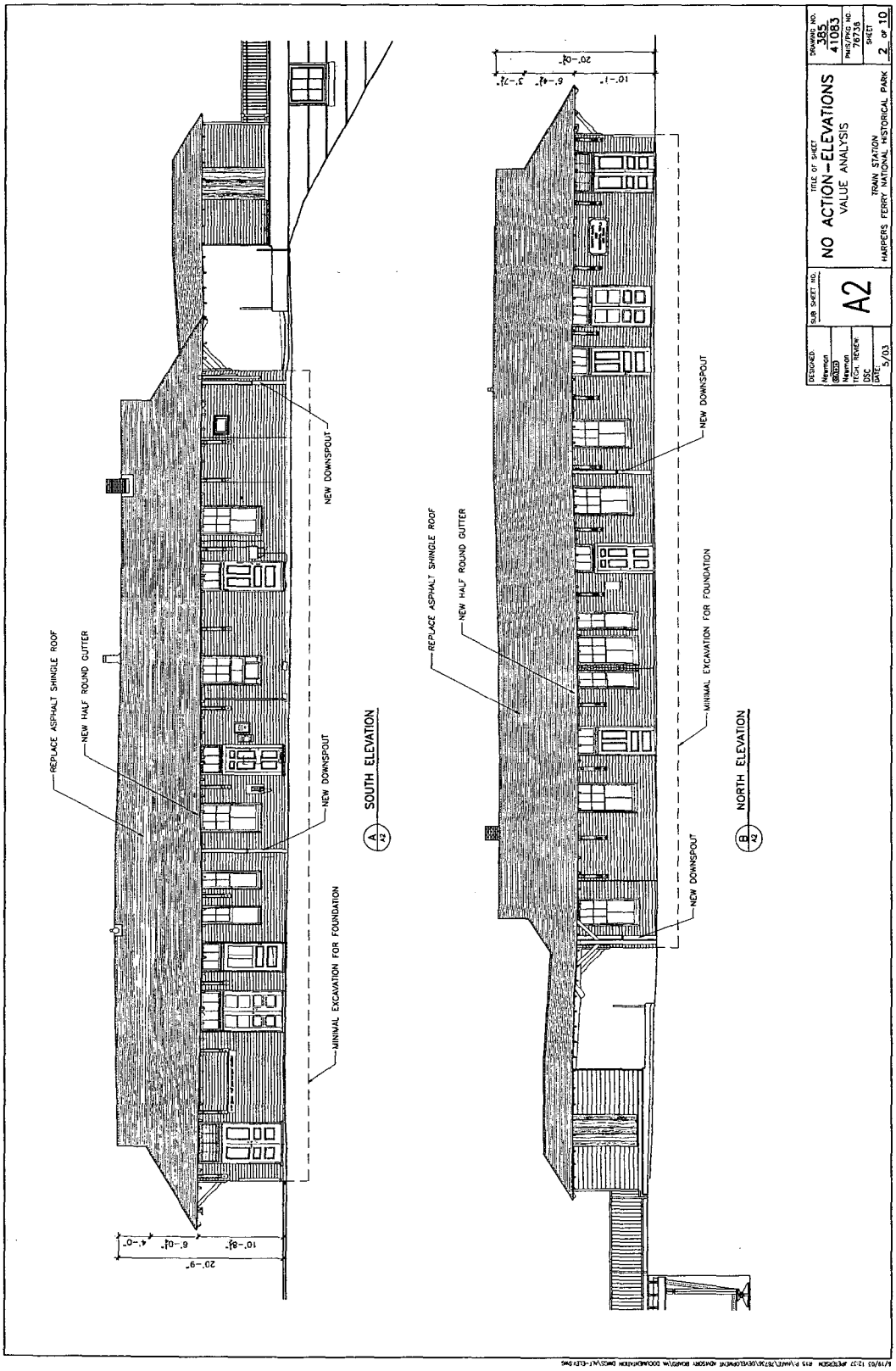
Harpers Ferry Train Station Rehabilitation Alternatives					
Alternative A *No-Action: Continued Preservation Maintenance*	**Alternative A+** *Maintain exterior elements to 1950 appearance. Rehabilitation of interior to allow compatible contemporary use*	**Alternative B** *Post move appearance restored to 1931 appearance. Interior adaptive reuse*	**Alternative C** *Pre move restored to 1894 appearance*	**Alternative D** *Post Move restored to 1931 appearance*	**Alternative E** *Pre-move restored to 1894 appearance*
▪ Maintain and repair existing dropped ceiling.	▪ Dropped ceilings maintained and preserved..	▪ Mansard ceilings and chamfered rafters restored.	▪ Mansard ceilings and chamfered rafters restored.	▪ Mansard ceilings and chamfered rafters restored.	▪ Mansard ceilings and chamfered rafters restored.
▪ Missing flooring replaced	▪ Missing flooring restored.	▪ Missing flooring restored.	▪ Missing flooring restored.	▪ Missing flooring restored.	▪ Missing flooring restored.
▪ Electric heat only (no air conditioning) to prevent freezing and thawing to the structure.	▪ HVAC installed (either oil-fueled furnace or ground-loop heating system)	▪ HVAC installed (either oil-fueled furnace or ground-loop heating system)	▪ HVAC installed (either oil-fueled furnace or ground-loop heating system)	▪ HVAC installed (either oil-fueled furnace or ground-loop heating system)	▪ HVAC installed (either oil-fueled furnace or ground-loop heating system)
▪ Maintain existing interior beadboard ▪ Maintain interior doors and ticket window. ▪ Compartmentalized	▪ Missing interior doors / windows / beadboard repaired or replaced in kind. ▪ Some doors / windows / moldings restored to 1950s appearance. ▪ Compartmentalized	▪ Missing interior doors / windows / beadboard repaired or replaced in kind. ▪ Some doors / windows / moldings restored. ▪ Compartmentalized	▪ Missing interior doors / windows / beadboard repaired or replaced in kind. ▪ Some doors / windows / moldings restored. ▪ Fireplace restored. ▪ Open floor plan ▪ Interior connectivity	▪ Open interior with subway wall acknowledged. ▪ Missing interior doors / windows / beadboard repaired or replaced in kind. ▪ Some doors / windows / moldings restored. ▪ Fireplace restored.	▪ Open interior with subway wall acknowledged. ▪ Missing interior doors / windows / beadboard repaired or replaced in kind. ▪ Some doors / windows / moldings restored. ▪ Fireplace restored
▪ No bay windows	▪ No bay windows	▪ No bay windows	▪ Bay windows restored	▪ No bay windows	▪ Bay windows restored
▪ No interior hallway	▪ No interior hallway	▪ No interior hallway	▪ Interior hallway restored ▪ Interior connectivity	▪ Open interior floor plan	▪ Open interior floor plan

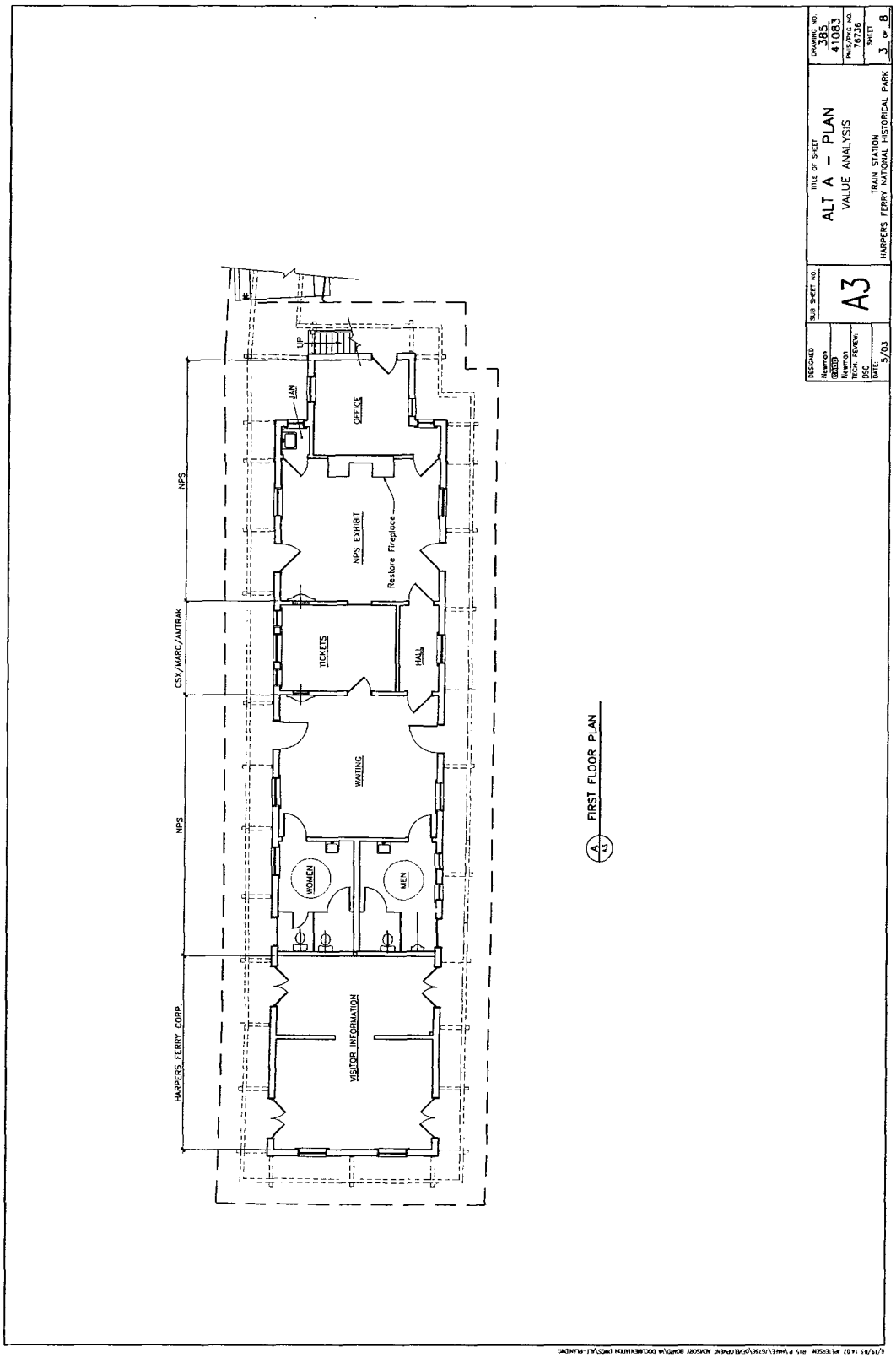
Drawings for Alternatives Studies

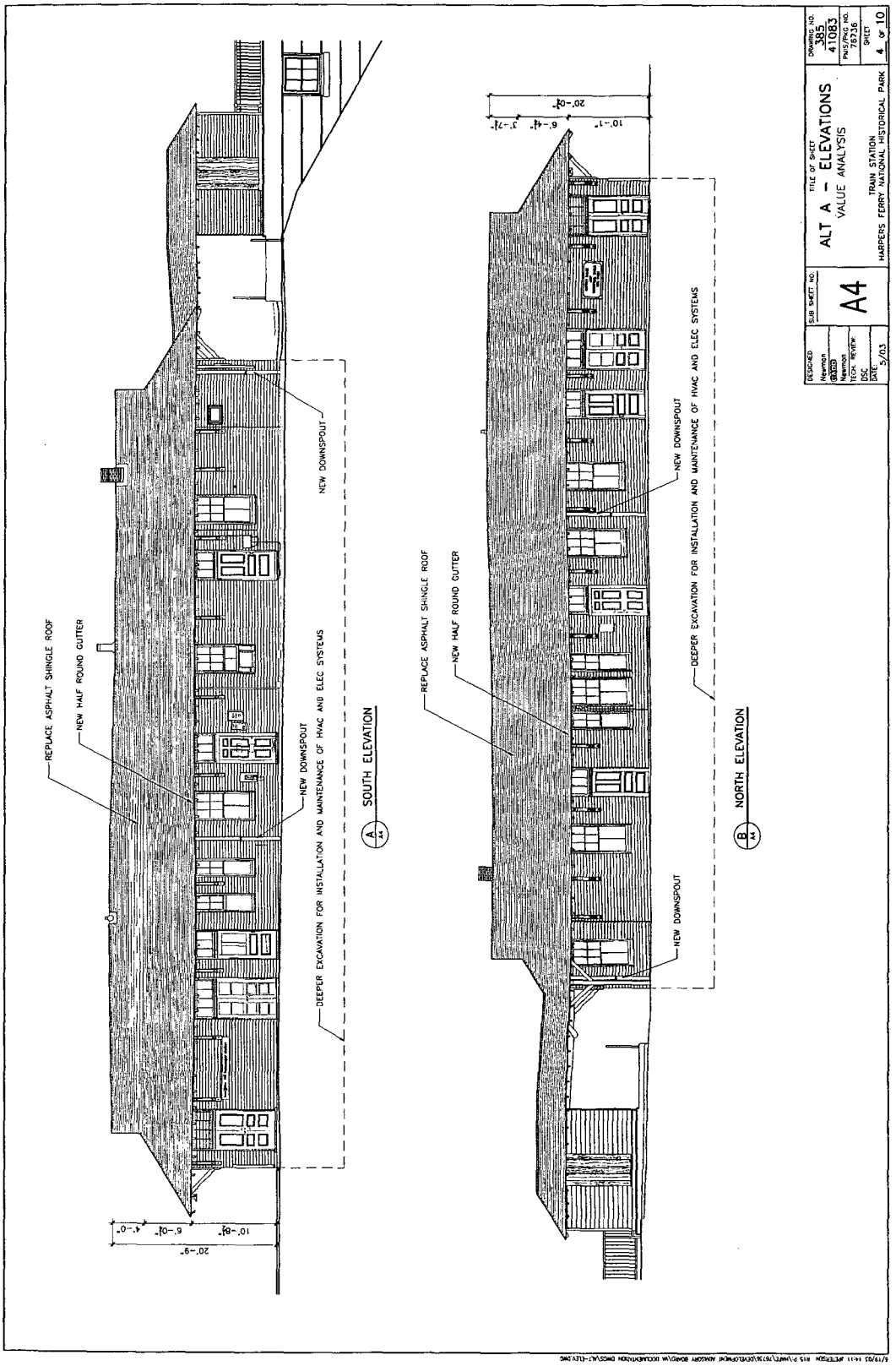
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A1	No Action – Plan / Value Analysis
A2	No Action – Elevations / Value Analysis
A3	Alt. A – Plan / Value Analysis
A4	Alt. A – Elevations / Value Analysis
A5	Alt. B – Plan / Value Analysis
A6	Alt. B – Elevations / Value Analysis
A7	Alt. C – Plans / Value Analysis
A8	Alt. C – Elevations / Value Analysis
A9	Alt. D – Plans / Value Analysis
A10	Alt. D – Elevations / Value Analysis

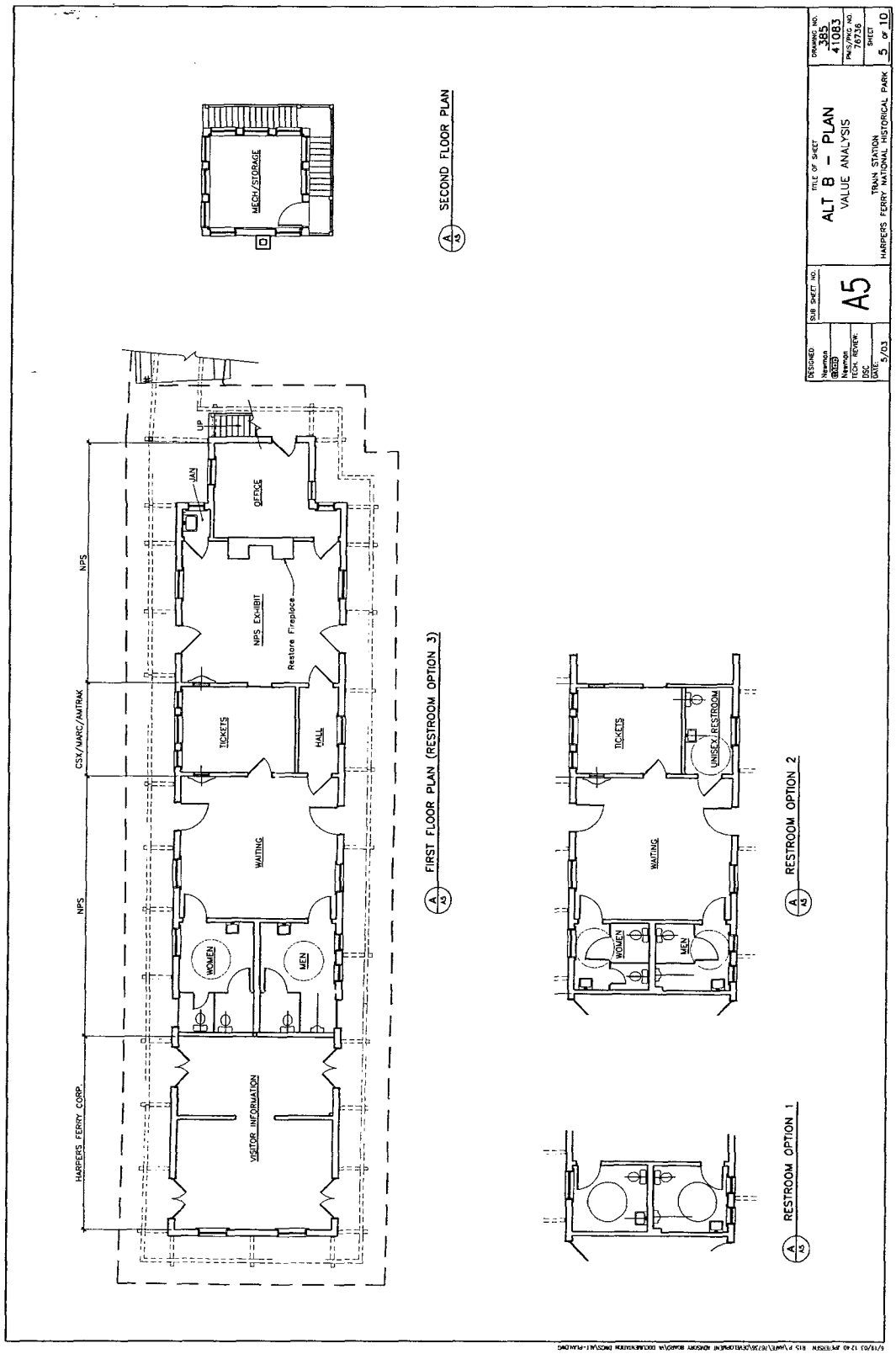

HARPERS FERRY TRAIN STATION
PARKING LOT (ASPHALT)
CSX RAILROAD
POTOMAC STREET
FOOTBRIDGE
MHD
SYMBOL KEY
— 275 — ELEVATION CONTOUR
SPOT ELEVATION
BOUNDARY MARKER (CAPPED REBAR)
NPS BOUNDARY
UTILITY POLE
LAMP POST
NOTES:
FIELDWORK CONDUCTED JULY 2002
CONTOUR INTERVAL = 1 FOOT
SCALE OF FEET
DESIGNED:
TECH. REVIEW:
DATE: 04/03
SUB SHEET NO.
L1
TITLE OF SHEET
EXISTING SITE PLAN
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
DRAWING NO. 385 41,083
PMS/PKG NO. 76736
SHEET 2 OF 15

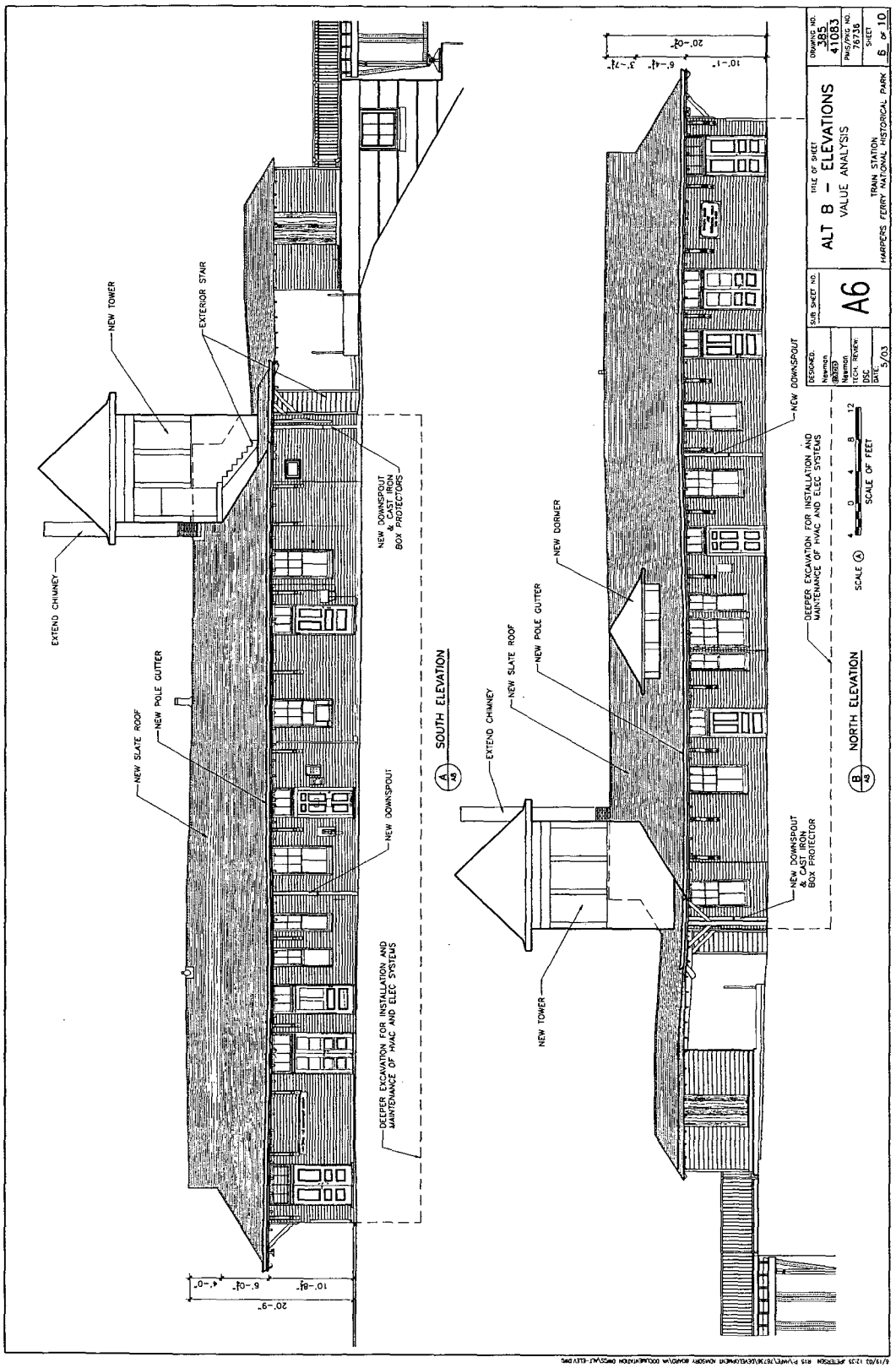

DRAWING NO. 385 41083
PMIS/PMG NO. 76736
SHEET 1 OF 10
TITLE OF SHEET
NO ACTION - PLAN
VALUE ANALYSIS
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
SUB SHEET NO. A1
DESIGNED Newman
DRAWN Newman
TECH. REVIEW
DSC
DATE 5/03
OFFICE
CL
VAN
NPS EXHIBIT
TICKETS
WAITING
WOMEN
MEN
VISITOR INFORMATION
Remove screen wall
NPS
CSX/MARC/AMTRAK
NPS
HARPERS FERRY CORP.
A1 FIRST FLOOR PLAN
SCALE OF FEET
4 0 4 8 12

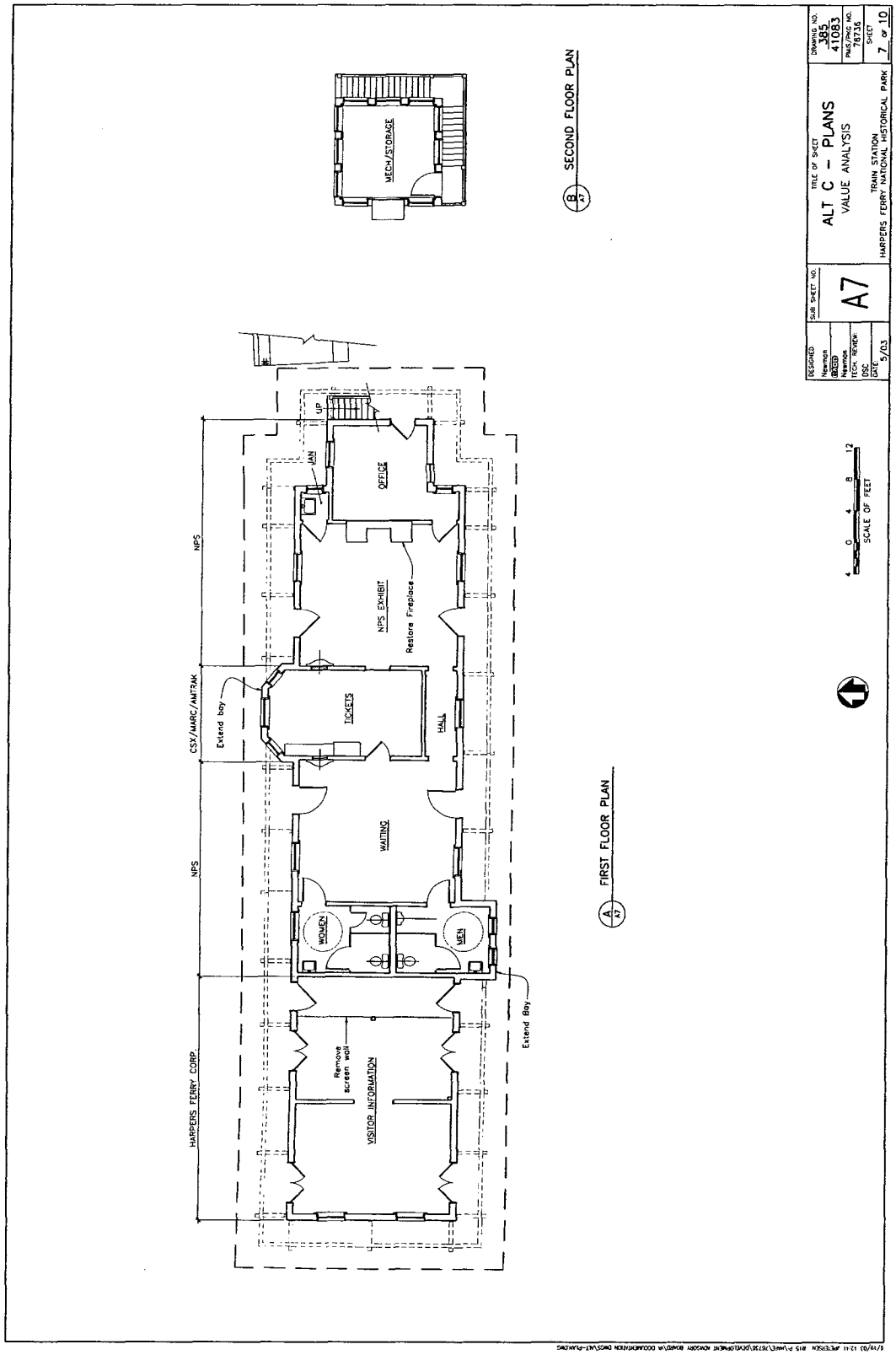

REPLACE ASPHALT SHINGLE ROOF
NEW HALF ROUND GUTTER
NEW DOWNSPOUT
NEW DOWNSPOUT
MINIMAL EXCAVATION FOR FOUNDATION
SOUTH ELEVATION
A2
REPLACE ASPHALT SHINGLE ROOF
NEW HALF ROUND GUTTER
NEW DOWNSPOUT
MINIMAL EXCAVATION FOR FOUNDATION
NEW DOWNSPOUT
NORTH ELEVATION
B
A2
DESIGNED
Newman
DRAWN
Newman
TECH. REVIEW
DRC
DATE
5/03
SUB SHEET NO.
A2
TITLE OF SHEET
NO ACTION-ELEVATIONS
VALUE ANALYSIS
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
DRAWING NO.
385
41083
PMIS/PKG NO.
76736
SHEET
2 OF 10

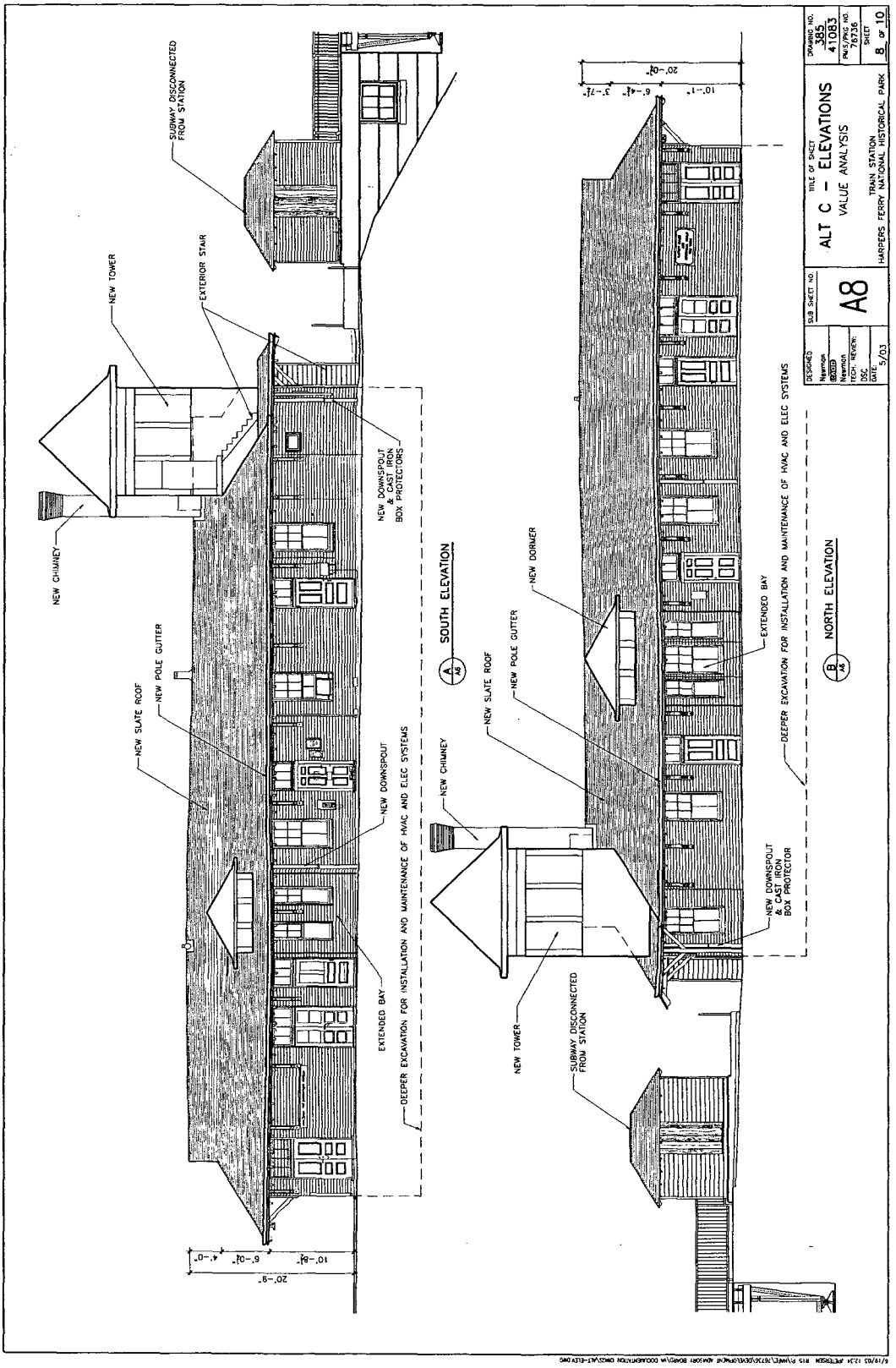

DRAWING NO. 385 41083
PMIS/PKG NO. 76738
SHEET 3 OF 8
TITLE OF SHEET
ALT A - PLAN
VALUE ANALYSIS
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
SUB SHEET NO
A3
DESIGNED Newman
DRAWN Newman
CHECK REVIEW:
DSC
DATE: 5/03
UP
JAN
OFFICE
NPS
NPS EXHIBIT
Restore Fireplace
CSX/MARC/AMTRAK
TICKETS
HALL
WAITING
NPS
WOMEN
MEN
HARPERS FERRY CORP.
VISITOR INFORMATION
A3
FIRST FLOOR PLAN

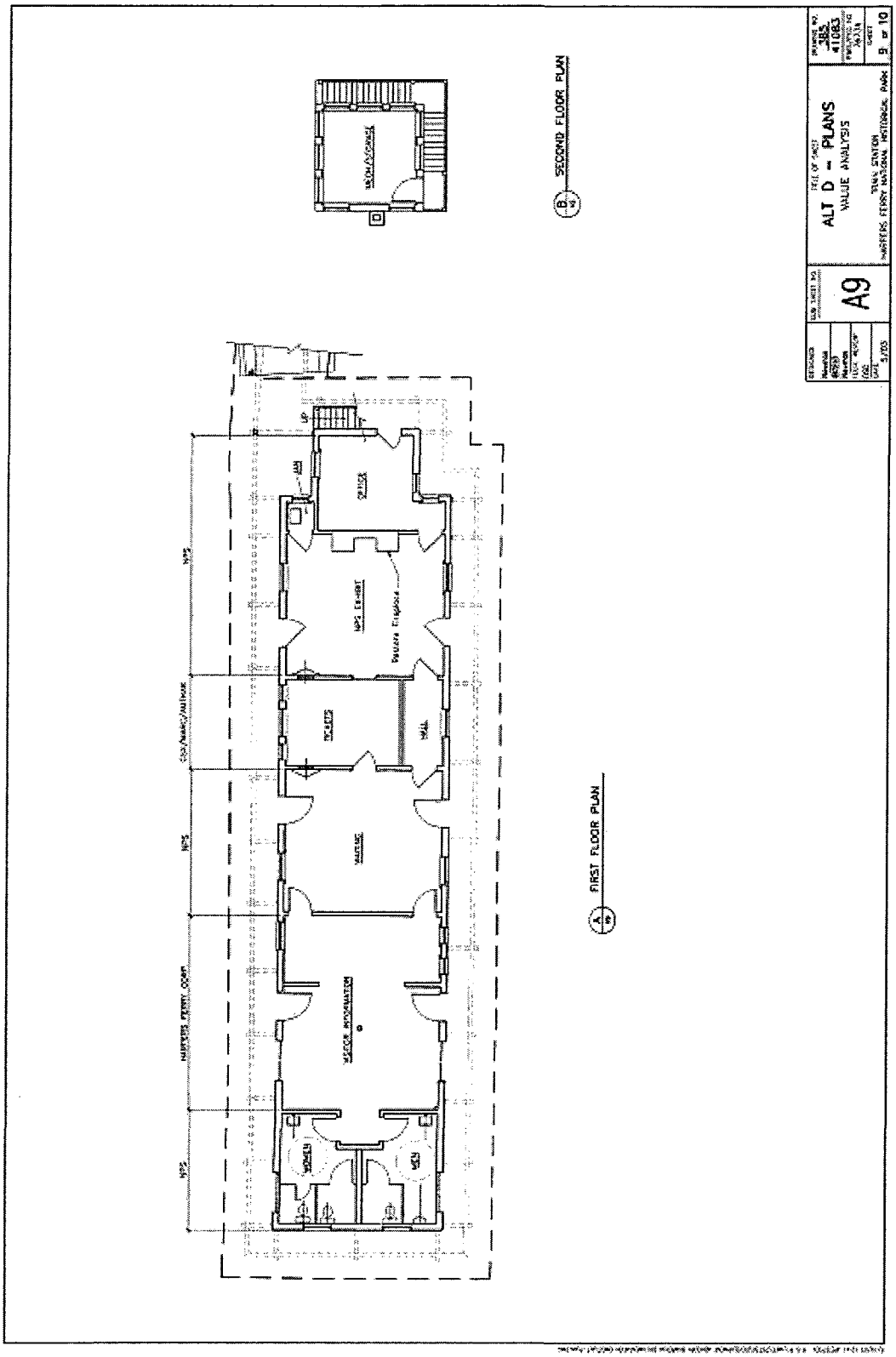

REPLACE ASPHALT SHINGLE ROOF
NEW HALF ROUND GUTTER
NEW DOWNSPOUT
NEW DOWNSPOUT
DEEPER EXCAVATION FOR INSTALLATION AND MAINTENANCE OF HVAC AND ELEC SYSTEMS
A A4 SOUTH ELEVATION
REPLACE ASPHALT SHINGLE ROOF
NEW HALF ROUND GUTTER
NEW DOWNSPOUT
DEEPER EXCAVATION FOR INSTALLATION AND MAINTENANCE OF HVAC AND ELEC SYSTEMS
NEW DOWNSPOUT
B A4 NORTH ELEVATION
DESIGNED Newman
DRAWN Newman
TECH. REVIEW
DATE 5/03
SUB SHEET NO. A4
TITLE OF SHEET
ALT A - ELEVATIONS
VALUE ANALYSIS
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
DRAWING NO. 385 41083
PMIS/PMC NO. 78736
SHEET 4 OF 10

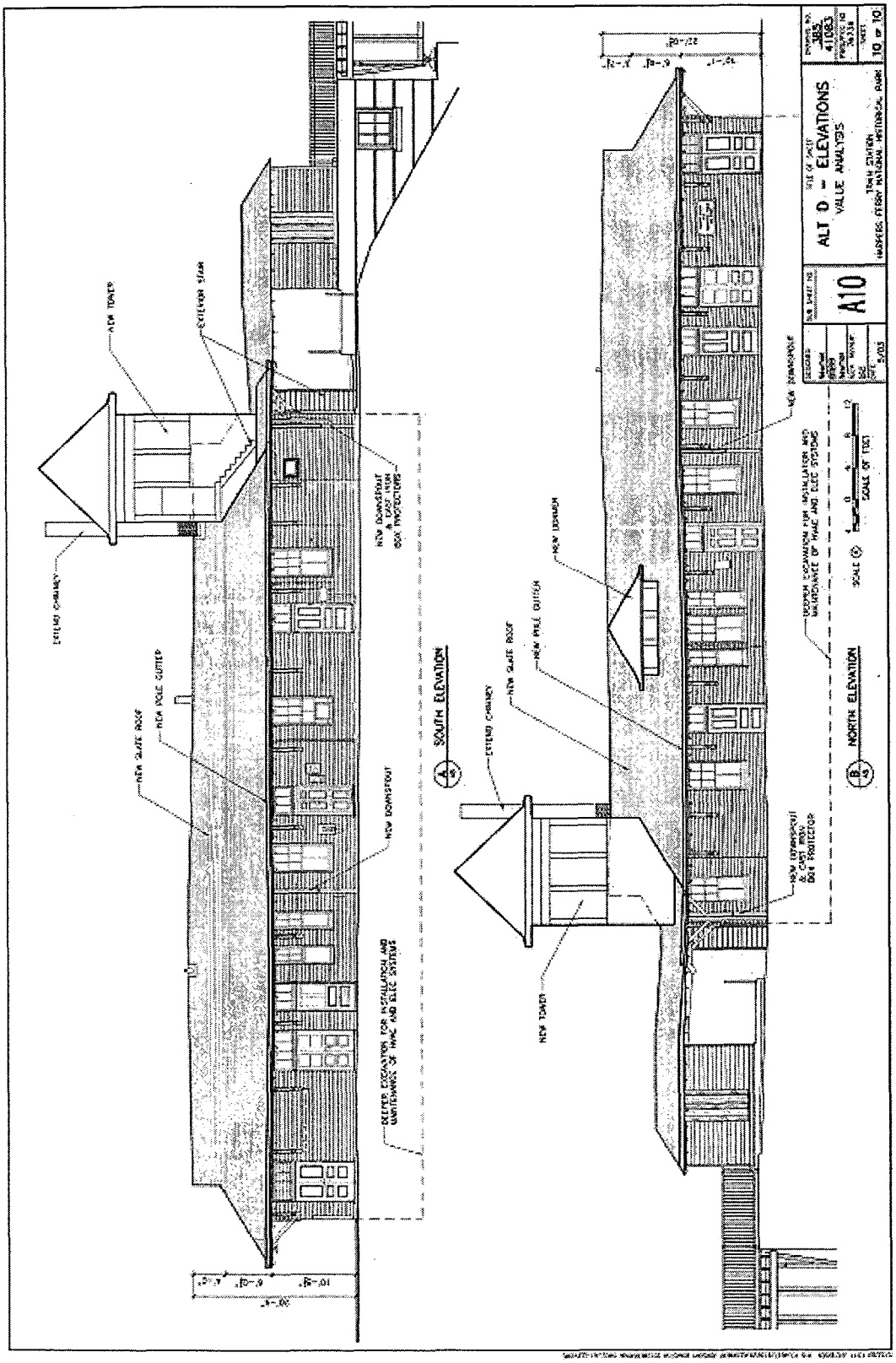

MECH/STORAGE
SECOND FLOOR PLAN
A5
UP
VAN
OFFICE
NPS EXHIBIT
Restore Fireplace
TICKETS
HALL
WAITING
WOMEN
MEN
VISITOR INFORMATION
NPS
CSX/NARC/AMTRAK
NPS
HARPERS FERRY CORP.
FIRST FLOOR PLAN (RESTROOM OPTION 3)
A5
TICKETS
UNISEX/RESTROOM
WAITING
WOMEN
MEN
RESTROOM OPTION 2
A5
RESTROOM OPTION 1
A5
DESIGNED
Newman
DRAWN
Newman
TECH. REVIEW:
DSC
DATE
5/03
SUB SHEET NO.
A5
TITLE OF SHEET
ALT B - PLAN
VALUE ANALYSIS
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
DRAWING NO.
385
41083
PKG/PRJ NO.
76736
SHEET
5 of 10


NEW TOWER
EXTERIOR STAIR
EXTEND CHIMNEY
NEW SLATE ROOF
NEW POLE GUTTER
NEW DOWNSPOUT & CAST IRON BOX PROTECTORS
NEW DOWNSPOUT
DEEPER EXCAVATION FOR INSTALLATION AND MAINTENANCE OF HVAC AND ELEC SYSTEMS
A SOUTH ELEVATION
NEW DORMER
NEW SLATE ROOF
NEW POLE GUTTER
EXTEND CHIMNEY
NEW DOWNSPOUT
DEEPER EXCAVATION FOR INSTALLATION AND MAINTENANCE OF HVAC AND ELEC SYSTEMS
NEW DOWNSPOUT & CAST IRON BOX PROTECTOR
NEW TOWER
B NORTH ELEVATION
SCALE A
SCALE OF FEET
TITLE OF SHEET
ALT B - ELEVATIONS
VALUE ANALYSIS
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
DRAWING NO. 385 41083
PMIS/PMG NO. 76736
SHEET 6 OF 10
SUB SHEET NO. A6
DESIGNED Newman
DRAWN Newman
TECH. REVIEW
DATE 5/03


MECH/STORAGE
SECOND FLOOR PLAN
A7
UP
MAN
OFFICE
NPS
NPS EXHIBIT
Restore Fireplace
CSX/MARC/AMTRAK
Extend bay
TICKETS
HALL
WAITING
NPS
WOMEN
MEN
Extend Bay
HARPERS FERRY CORP.
Remove screen wall
VISITOR INFORMATION
FIRST FLOOR PLAN
A7
SCALE OF FEET
0 4 8 12
DRAWING NO. 385 41083
PMIS/PMG NO. 76736
SHEET 7 of 10
TITLE OF SHEET
ALT C - PLANS
VALUE ANALYSIS
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
SUB SHEET NO. A7
DESIGNED Newmon
DRAWN Newmon
TECH. REVIEW:
DATE 5/03


SUBWAY DISCONNECTED FROM STATION
NEW TOWER
EXTERIOR STAIR
NEW CHIMNEY
NEW SLATE ROOF
NEW POLE GUTTER
NEW DOWNSPOUT & CAST IRON BOX PROTECTORS
EXTENDED BAY
DEEPER EXCAVATION FOR INSTALLATION AND MAINTENANCE OF HVAC AND ELEC SYSTEMS
SOUTH ELEVATION
A8
NEW DORMER
NEW CHIMNEY
NEW SLATE ROOF
NEW POLE GUTTER
EXTENDED BAY
DEEPER EXCAVATION FOR INSTALLATION AND MAINTENANCE OF HVAC AND ELEC SYSTEMS
NEW DOWNSPOUT & CAST IRON BOX PROTECTOR
NEW TOWER
SUBWAY DISCONNECTED FROM STATION
NORTH ELEVATION
B
A8
20'-0"
10'-8"
6'-0"
4'-0"
20'-9"
10'-1"
6'-4"
3'-7½"
20'-0"
DRAWING NO. 385 41083
PMS/PKG NO. 76736
SHEET 8 OF 10
TITLE OF SHEET
ALT C - ELEVATIONS
VALUE ANALYSIS
TRAIN STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
SUB SHEET NO.
A8
DESIGNED Newmon
DRAWN Newmon
TECH. REVIEW:
DSC
DATE 5/03


SECOND FLOOR PLAN
FIRST FLOOR PLAN
ALT D - PLANS
VALUE ANALYSIS
A9


ALT D - ELEVATIONS
VALUE ANALYSIS
A10
SOUTH ELEVATION
NORTH ELEVATION
NEW TOWER
EXTEND CHIMNEY
NEW SLATE ROOF
NEW DOWNSPOUT
NEW SKYLIGHT
NEW DORMER ROOF
NEW VALLEY GUTTER
DEEPER EXCAVATION FOR INSTALLATION AND MAINTENANCE OF HVAC AND ELEC SYSTEMS

Cost Estimates

The following is a list of the Class "C" Cost Estimates for each alternative and as a stand-alone item:

▪ Hazmat Removal -	$131,968
▪ No Action (originally called Alternative A)	$733,286
▪ Alternative A (originally called Alternative A+)	$795,739
▪ Alternative B	$1,225,644
▪ Alternative C	$1,357,799
▪ Alternative D (Alt. B plus $9075)*	$1,234,719
▪ Geothermal Ground Loop System	$144,162
▪ Temporary Parking (12 Spaces)	$58,708

*= PREFERRED ALTERNATIVE

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Ultimate Treatment & Use

The National Park Service is preparing to advertise a construction project that would rehabilitate the existing train station of Harpers Ferry National Historical Park. In April/May 2003, the interdisciplinary value study team performed Choosing by Advantage (CBA) to identify the preferred rehabilitation concepts.

Summary Description of Project

This project concerns the restoration/rehabilitation of the historic Harpers Ferry Train Station. The train station is sited on approximately two acres which is primarily used for commuter parking.

Harpers Ferry's Train Station is an integral component of the historic "Lower Town" of Harpers Ferry and a popular destination on Amtrak's Capital Limited line and MARC commuter trains. This station is 107 years old and still exists in most of its original form and is used for its original purpose. The existing conditions of the station and site do not meet governing building codes. Currently, one-half of the station is unused and in very poor condition. Hazardous materials are present and building fabric is deteriorating. For the purposes of accessibility, sustainability, historic preservation, life safety, public transportation, and interpretation of the nation's National Industrial Heritage, the National Park Service is undertaking to restore/rehabilitate this historic train station.

Harpers Ferry National Historical Park is moving forward with plans to restore the historic Harpers Ferry Train Station. With the CSXT Transportation land transfer in 2001, the National Park Service acquired 6 acres of historic property along the Potomac River containing the ruins of the 19th Century U.S Armory Yard and the 1894 B&O Train Station Depot. Proposed restoration activities include the Train Station building restoration and rehabilitation. Future landscape improvements, new exhibits and furnishings are not part of this contract due to funding limits.

Superintendent Campbell recently signed a cooperative agreement between the town of Harpers Ferry and the Park, which released a $320,000 West Virginia State planning grant that will be used for the train station efforts. Senator Robert C. Byrd secured $1.9 million in a FY-2003 Appropriations Bill for the project. The project is now fully funded at $2.2 million.

The project is in the early design stage. The National Park Service and U.S. Public Health Service completed studies to identify hazardous materials within the old station, which were then removed in the fall of 2003. When completed, the fully restored station will

serve MARC and AMTRAK passengers, provide the town of Harpers Ferry with space to disperse visitor information, and house Harpers Ferry National Historical Park exhibits on the railroad history (courtesy of HAFE Web Page).

Purpose and Value Study Objectives

The primary purposes of this project are:

- Preserve the historic resources of the Harpers Ferry Train Station.
- Enhance the interpretive potential of this significant resource to better communicate the regional/local transportation and industrial stories.
- Rehabilitate interior rooms for new uses by the NPS, Town of Harpers Ferry and other park partners.
- Accommodate continued use of this facility as an active, functioning train station.
- Hazardous material mitigation.

This project shall not include:

- Improvements to site or building located outside of NPS boundaries, including the subway tunnel and frame enclosures/waiting area over each tunnel entrance and platform areas.
- Improvements to the CXST Railroad Platform on each side of the tracks.
- Site or parking area improvements.

Summary of Recommendations

Based on the VA/CBA process, Alternative D is the preferred alternative. This alternative will meet the interest of the public, commuters, visitors, the Town, SHPO, HAFE Park, the State of West Virginia and the NPS. The train station is 107 years old and has lost its once "grandeur" presence that was designed by architect E. Francis Baldwin. Although the station is still functioning as its original purpose and in its original form, today it does not meet safety codes nor public expectations.

The preferred alternative can be characterized as a "rehabilitation" to the train station's post-move (1931) appearance. The station was moved from its original location to its present site in 1931 during railroad improvements. The station is considered historically significant not only for its association with the history of railroad development and transportation in the United States, but also for its distinctive physical characteristics of construction and form; and its association with a notable architect, E. Francis Baldwin. The train

station also continues a long record of service for the region's rail passengers (Andrew Lee – HAFE). Alternative D, the Preferred Alternative would rehabilitate the train station and restore some exterior elements to return the station to its 1931 appearance shortly after its relocation at its current site. Thus, Alternative D would maintain the authenticity and historic integrity of the station's historic identity, evidenced by the physical characteristics that existed during the property's historic period in association with its post-move location and setting. Alternative D will bring forth an immediate benefit for all stakeholders. If the train station remains in its current condition, it will be a disappointment for the public and the park.

Using the Choosing by Advantages (CBA) methodology, Alternative D scored 510; Alternative B scored 385, Alternative A+ scored 370, Alternative C scored 310 and Alternative A (No Action) scored 135.

At the completion of the Pre-Design Phase, the Class B estimate shows the project to be $1,425,395; approximately $636 per square foot for the building (not including SF from basement). This cost is similar to one of the cost comparable train stations listed in this report.

The Preferred Alternative Cost Estimate breakdown is as follows:

Hazmat	$131,968
Alternative B	$1,225,644
Alternative D	$9,075 (Preferred Alternative = B + D)
Temporary Parking	$58,708 (12 Spaces)
TOTAL	**$1,425,395**

Currently, Alternative D, the Preferred Alternative is approximately $25,000 over allocated funds. As time in the design phase progresses, the design team feels that the design contingency will be reduced, which in return, will offset the overrun. Also, in the Class B Cost Estimate, a safety edge is specified ($22,313) but this design element is questionable because of the standards set forth by CSXT. Also, the cost estimate for the temporary 12 spaces currently itemizes a small retaining wall for $10,365. The designers are working to reduce the slope ratio and completely eliminate this item. The additional 12 spaces is needed to maintain the current parking stall count to 89. The additional parking is temporary and will be removed once construction activities are complete. This parking area will be located on a portion of the historic rail alignment.

TOTAL	**$1,425,395**
Potential Savings:	$-22,313 (Safety Edge)
	$10,365 (Retaining Wall at Temporary Parking)
	$1,392,717 WITHIN ALLOCATED FUNDS

The Harpers Ferry Train Station rehabilitation project will prevent the loss of resources, provide opportunities to increase interpretation and education, develop stronger partnerships with Town, continue train operations and services, and improve overall use of the facility. This project has benefits to the public health and safety welfare, as the hazardous material is removed and the structure will meet code. It is important to rehabilitate and maintain the station for the rest of the 21st century.

Code Requirements for Treatment

Code analysis for this review is predicated upon application of the year 2000 International Building Code (IBC), the local code having jurisdiction, as well as NFPA-5000 Building Construction and Safety Code, the recommended code for National Park Service projects. These codes will be augmented by consideration of the ADA Accessible Guidelines (ADAAG) as amended through January 13, 1998, where the latter code is more stringent than either of the previously mentioned documents. Additionally, aspects of the code analysis that might be affected by special West Virginia State code requirements will be highlighted.

Building Occupancy and Construction

Code application must be based upon the anticipated use(s) of the building. For this analysis these uses could involve assembly for both the waiting function and the interpretative functions with a total building occupancy in excess of 50 people. Ancillary office uses by Park or town of Harpers Ferry personnel are anticipated. These uses are considered "Assembly" in both the IBC and NFPA codes. Assembly is further classified as A-3 in IBC to cover museum or exhibition uses. The fire-separation distance between the building and any other occupied structure is greater than 30 feet. The distance from edge of overhang on the station to edge of overhang on the Westbound Waiting Shelter is greater than 37 feet.

The existing building is considered a one-story structure, having direct access to surrounding grade. The floor area is 2,136 square feet. Building height varies due to the anticipated reconstruction of the tower. Excluding the tower, the averaged height measured to the mid-point of the gable roof is 16 feet.

The height of the tower, to the mid-point of the roof is 34 feet. There is no anticipation of a second floor to the tower, and the space will be used for mechanical services for the building. The tower will not be considered occupied space.

Construction type is considered as wood frame, unprotected. Under IBC, the fire-resistant classification is termed Type V-B (frame, unprotected). Under NFPA-5000, the type is Type V-000, "in which exterior walls, bearing walls, columns, beams, girders, trusses, arches, floors, and roofs are entirely or partially of wood..." (Section 7.2.6).

Allowable building height and area calculations (IBC table 503) indicates that assembly use A-3 in structures of Type V-B construction are limited to 6,000 square feet per floor, one story, and a maximum of 40 feet in height. The train station is in compliance with this height and area limitation. Allowable building height and area calculations (NFPA-5000, table 7.4.1) indicates that

assembly use (<300) in structures of Type V-000 construction are limited to 5,500 square feet of floor, and one story, and a maximum of 40 feet in height. The train station is in compliance with this height and area limitation. In both cases the analysis assumes a non-sprinkler condition.

The addition of sprinklers will increase both allowable height and areas. This is not required by code for this building, as it is currently planned. However, installation of sprinklers will increase occupant life-safety, and in this case, will significantly increase the protection of the historic fabric, in the event of fire.

Structural Considerations: NFPA-5000 and ASCE 7-02

As noted under the structural section of this report, modern building codes require certain structural resistance to both gravity loads and lateral loads. As currently built and repaired, portions of the Harpers Ferry Train Station meet neither of these requirements. Recommendations for addressing these deficiencies are presented in the structural section of the existing conditions discussion. Strategies will not compromise the character-defining features of the building. Since the project anticipates the removal of the interior beaded board from the exterior walls, in order to provide insulation for the building, the walls can be strengthened from the inside with the addition of new wood studs during this operation. Current designs anticipate that the exterior sheathing and siding will remain in-place during the restoration.

Access for Persons with Special Needs

Allowing any public access to the building will require the accommodation of persons with special needs to an equal level. Fortuitously, in this building, there is direct "at-grade" access to all of the exterior doors of the station. Since no basement, and no second level to the tower are anticipated, a need for an elevator within the station is precluded. All persons, both the able-bodied and those with special needs, will be able to use the same paths for access and/or egress to the facilities.

Fire Protection

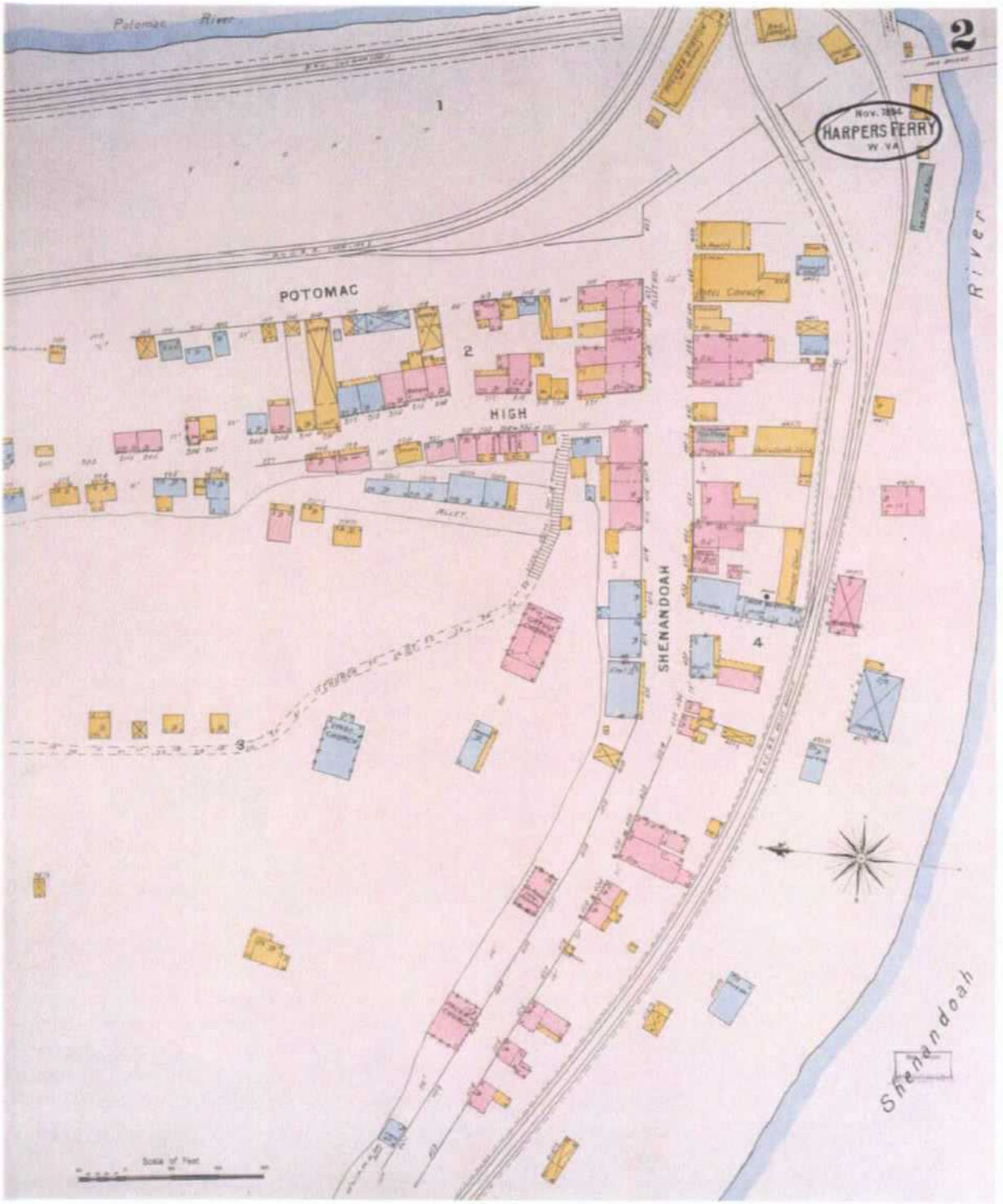
Currently, there is public water service located in Potomac Street, in the vicinity of the Train Station. South of the site, an 8" public water line is available in the road.

Code Summary

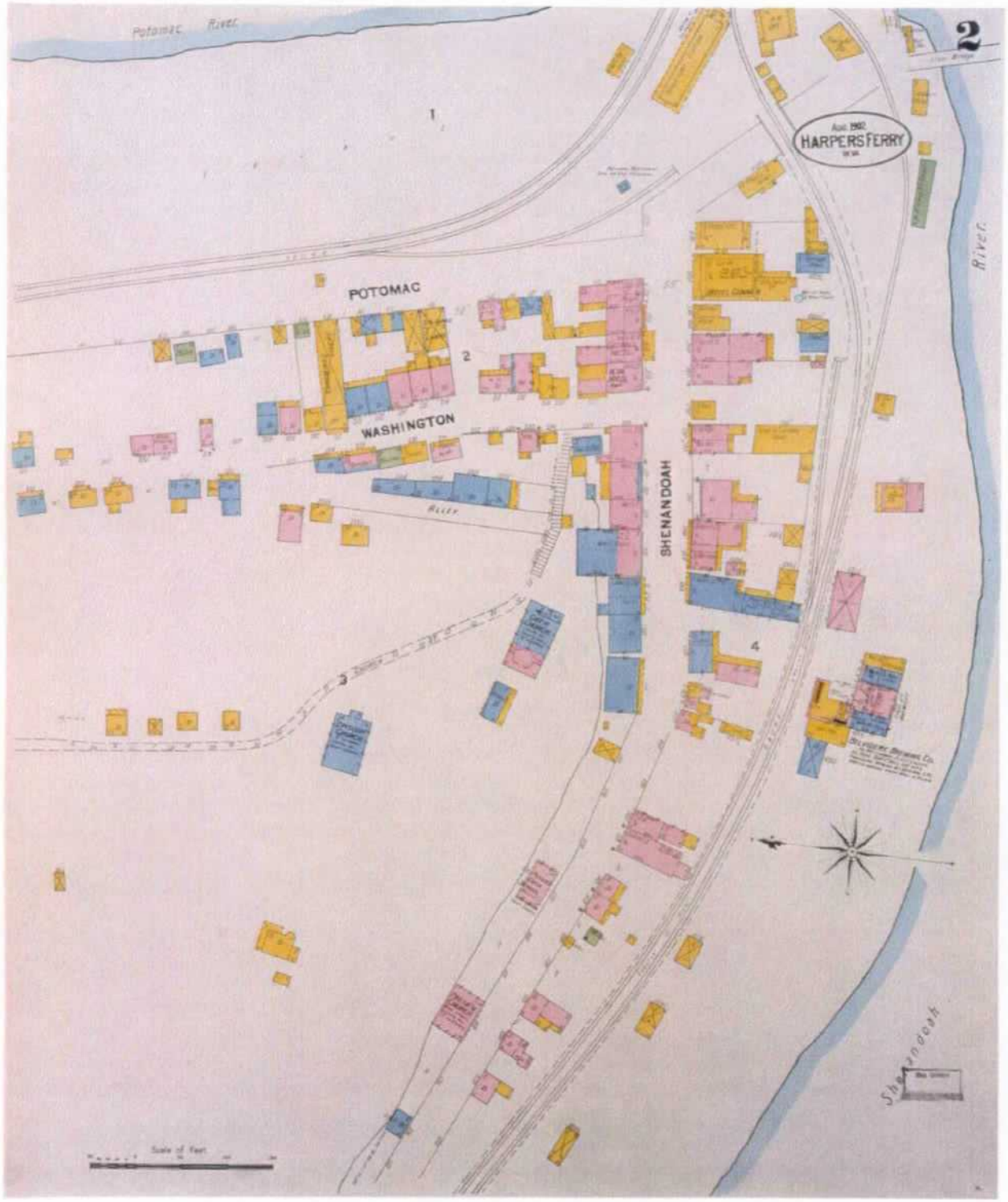
The property can be restored to its post-relocation appearance and to its anticipated uses without the insertion of a fully compliant sprinkler system. The entire floor level can be considered available for occupancy by code limitations.

Although not required by code, the installation of a fully-compliant sprinkler system will be able to protect more completely the historic fabric from fire.

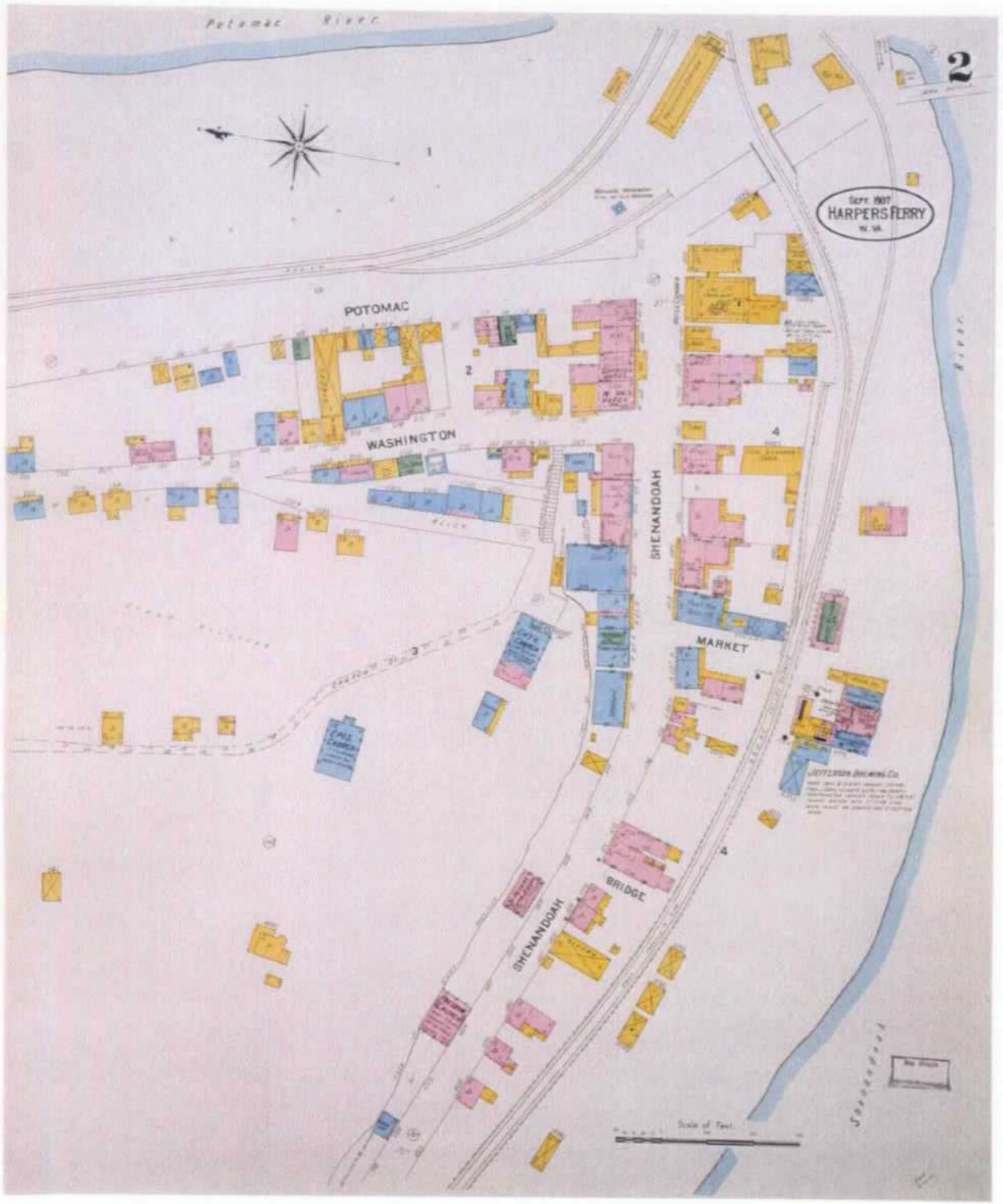
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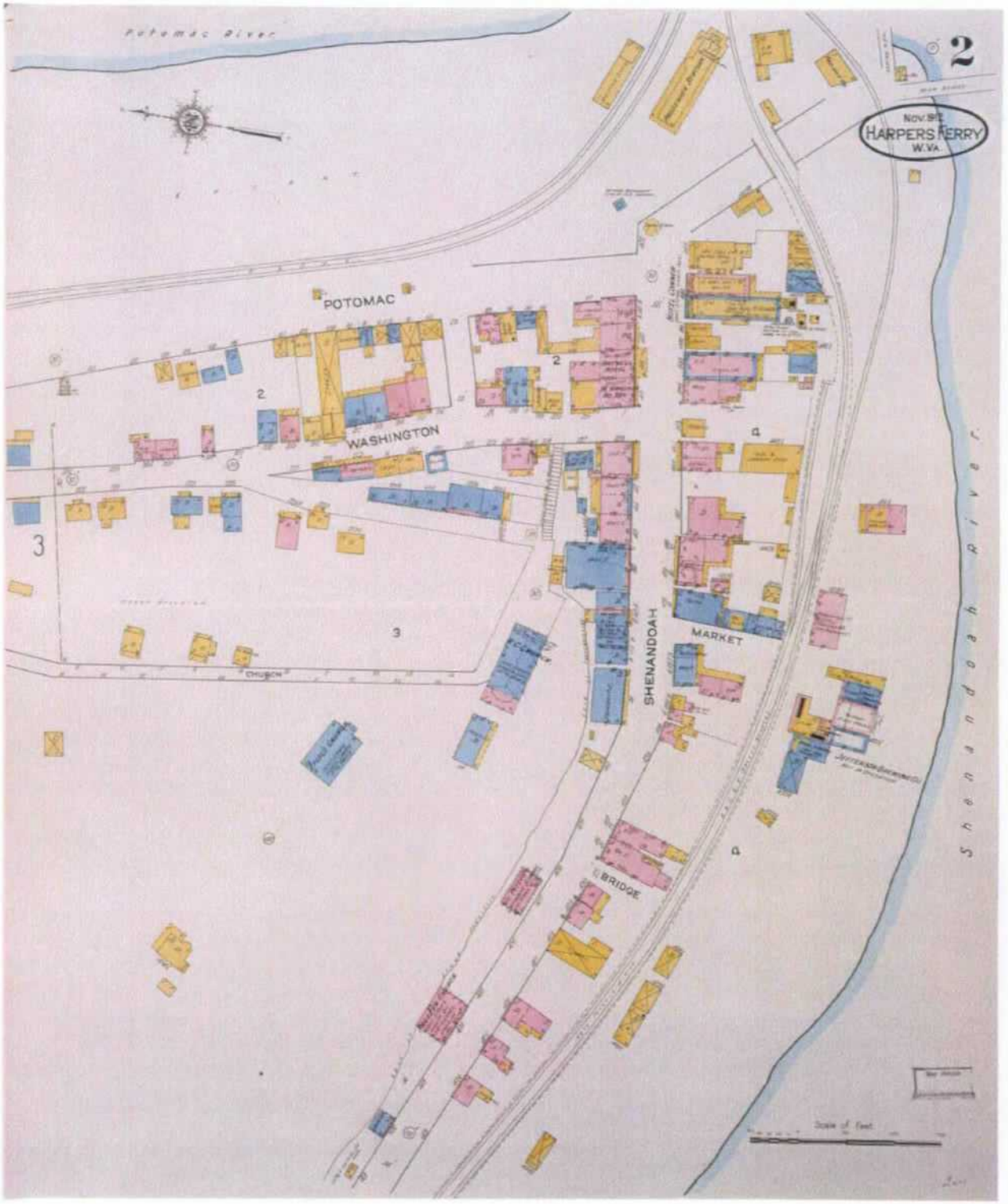
1894: Sanborn Fire Insurance Map.



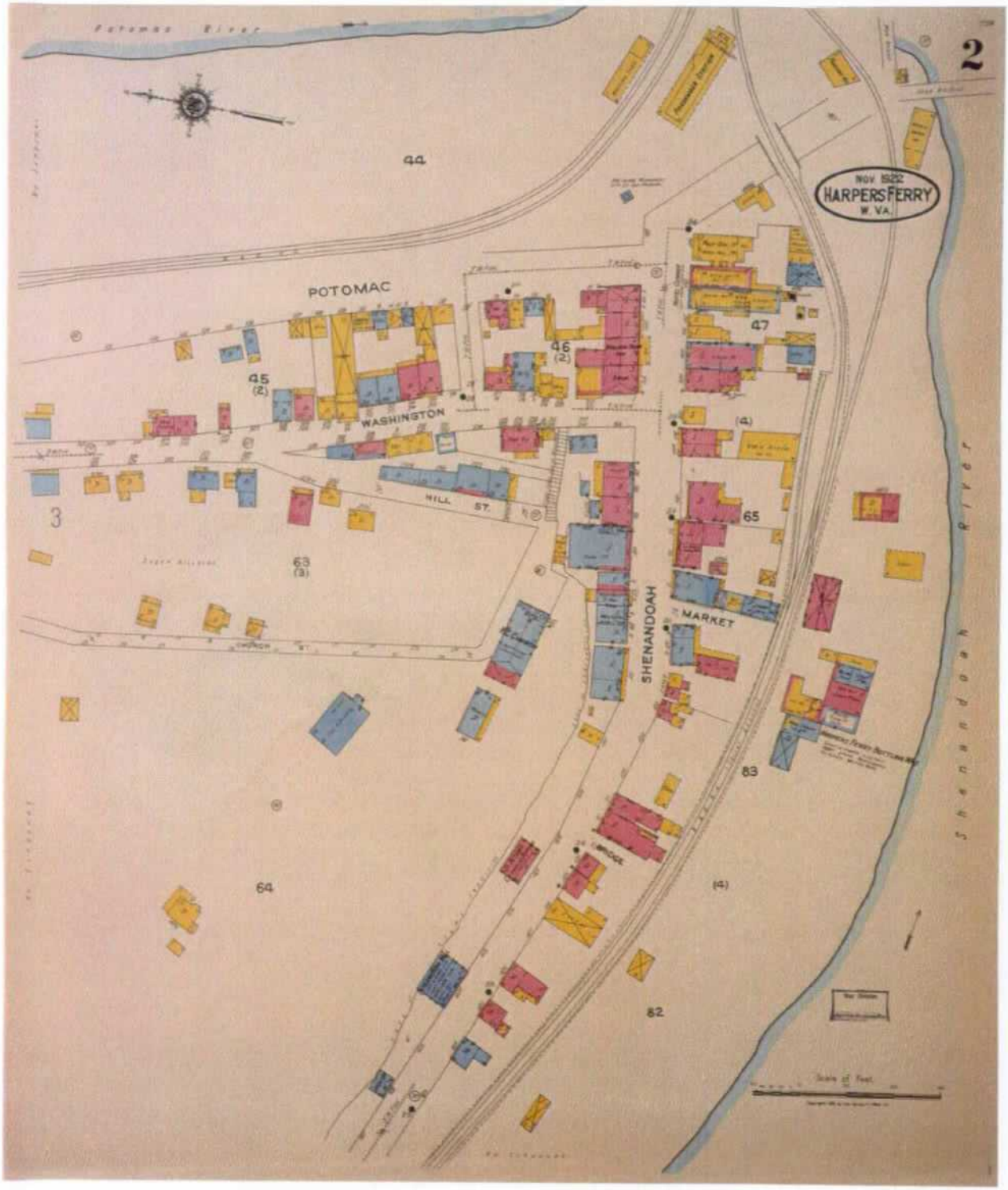
1902: Sanborn Fire Insurance Map.



1907: Sanborn Fire Insurance Map.



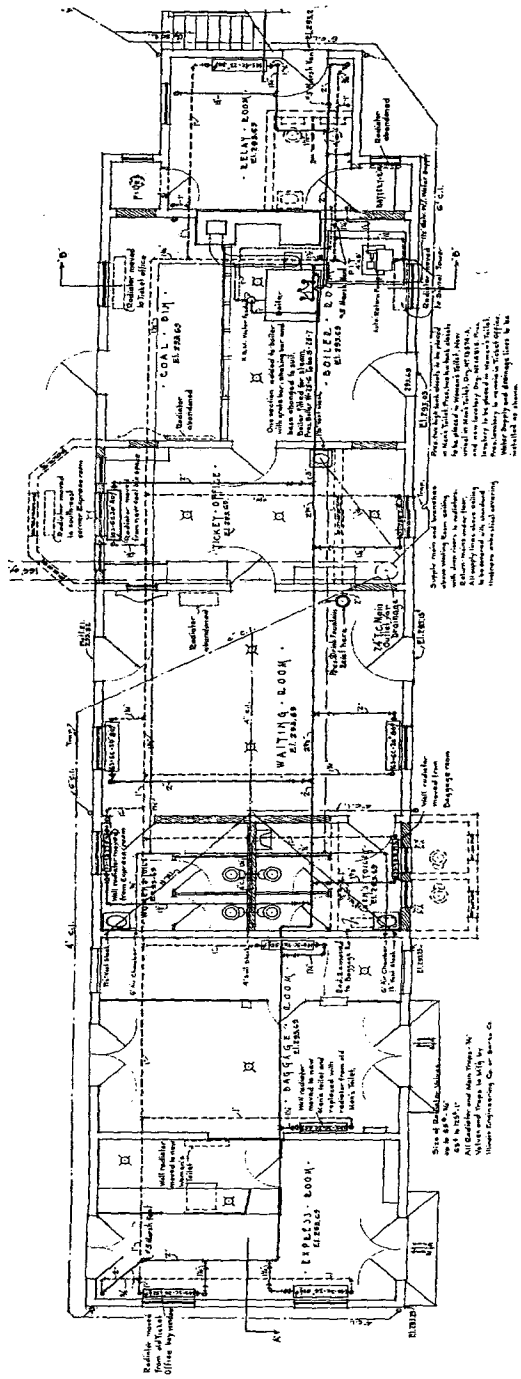
1912: Sanborn Fire Insurance Map.



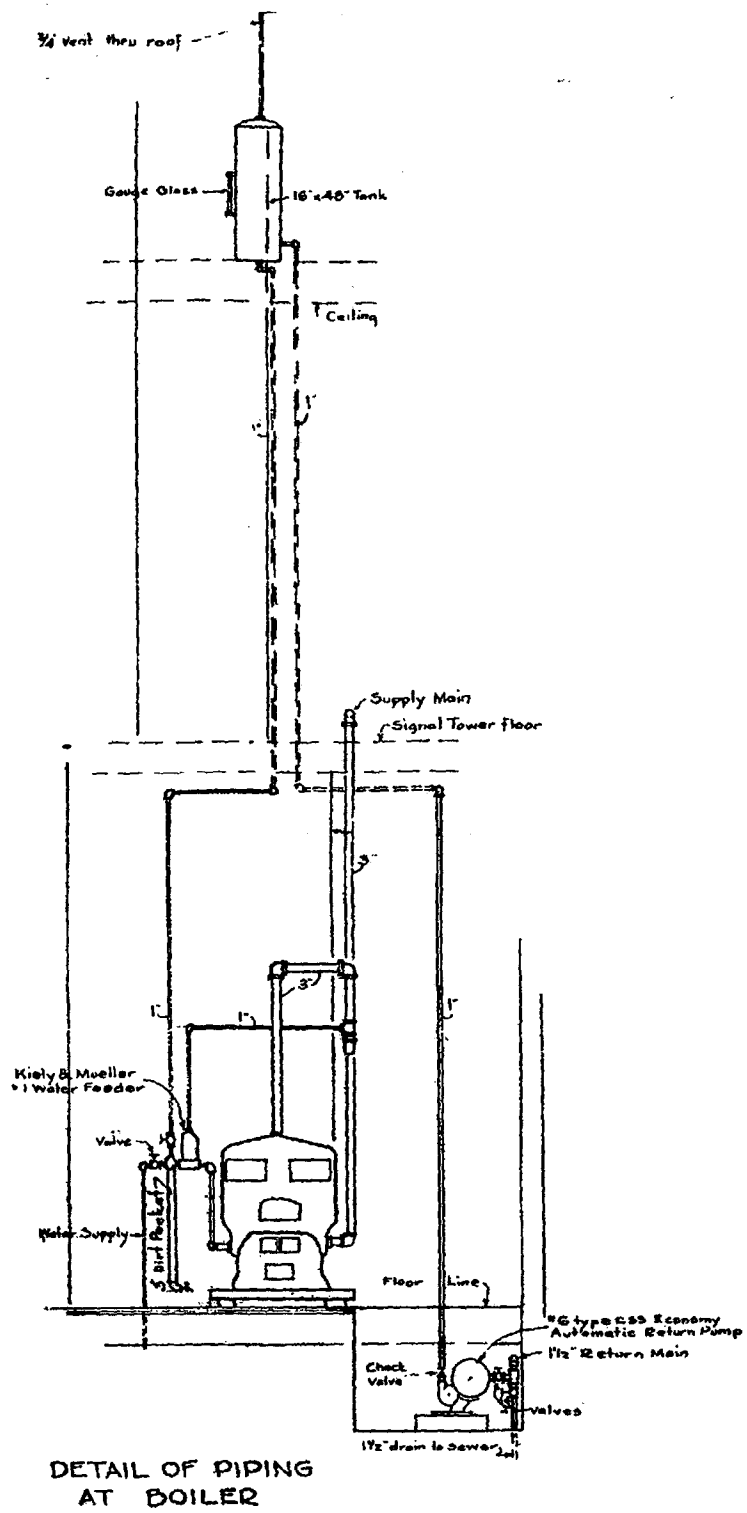
1922: Sanborn Fire Insurance Map.



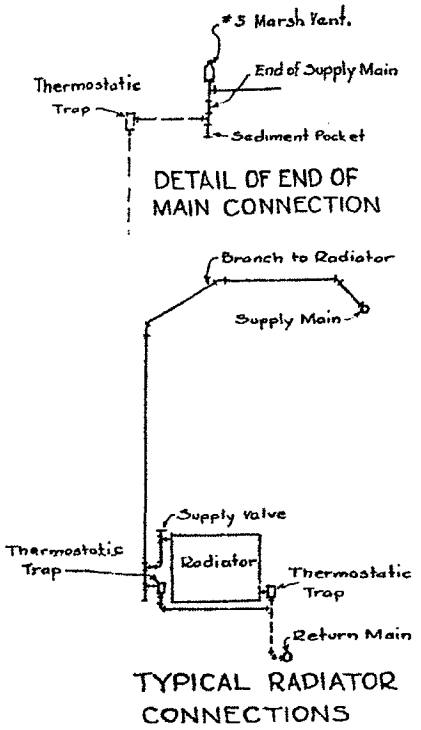
1933: Sanborn Fire Insurance Map.



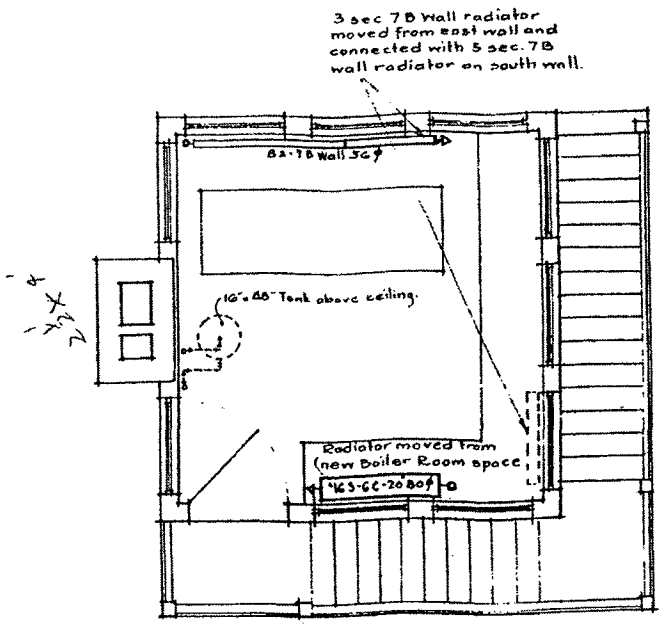
B&O drawing no 16689, heating and drainage plan (3-6-1931).



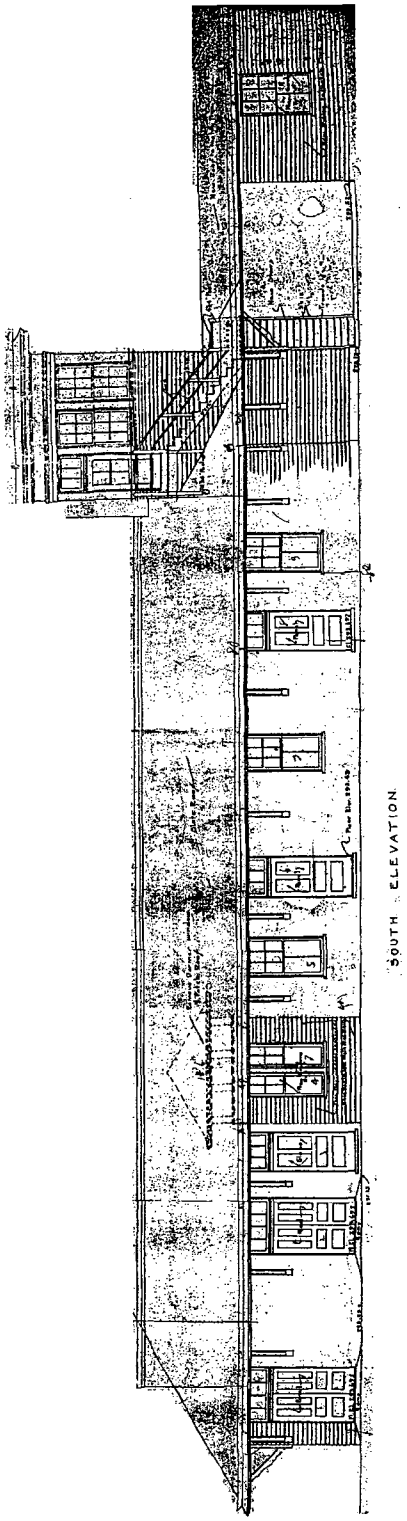
B&O drawing no 16689, detail of piping at boiler (3-6-1931).



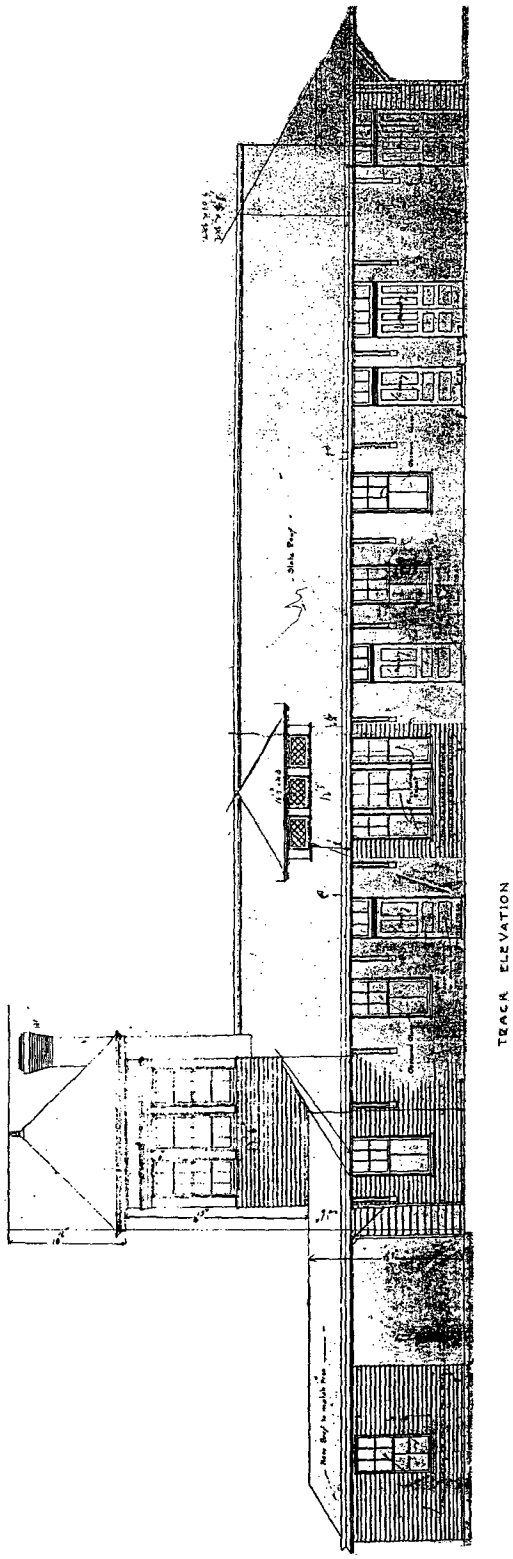
B&O drawing no 16689, typical radiator connections (3-6-1931).



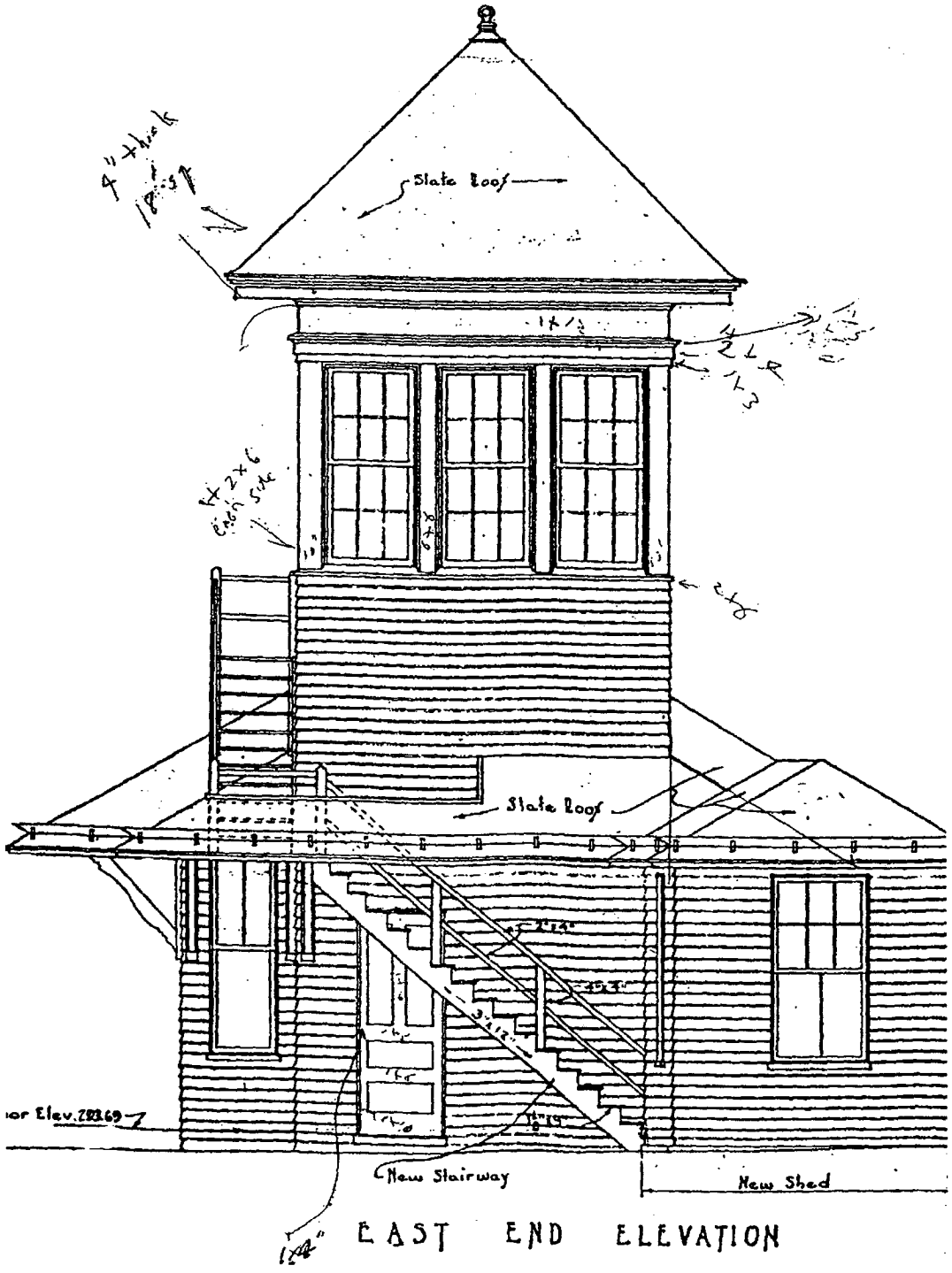
B&O drawing no 16689, tower details (3-6-1931).



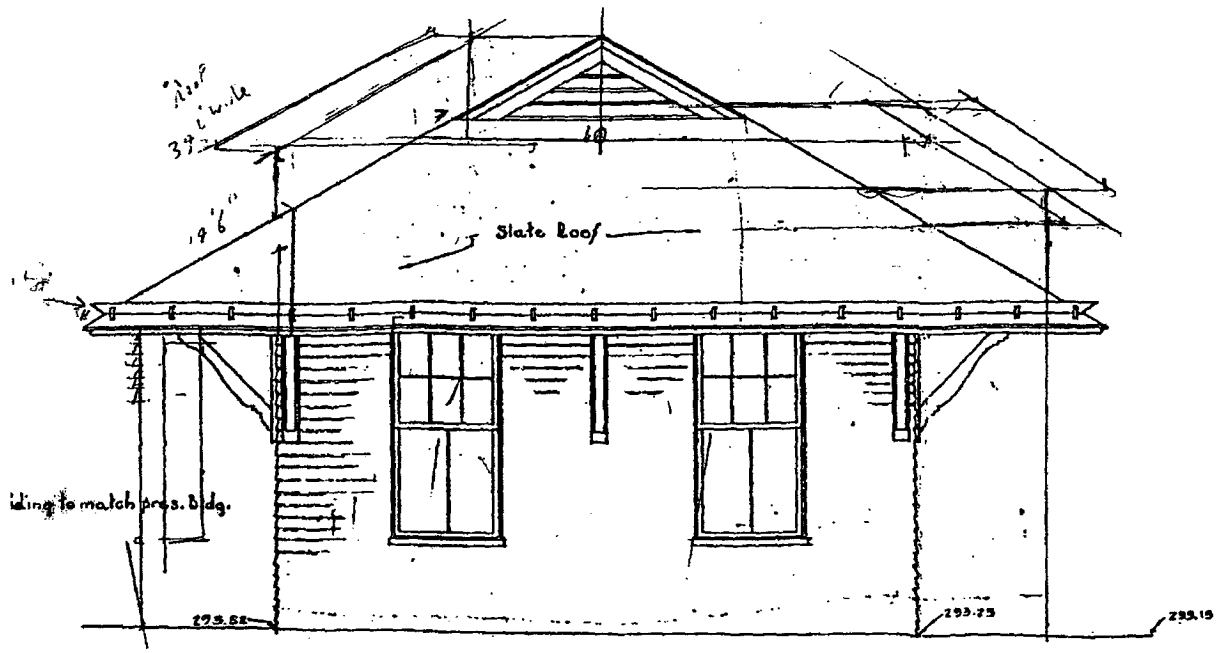
B&O drawing no 16690, south elevation (3-6-1931).



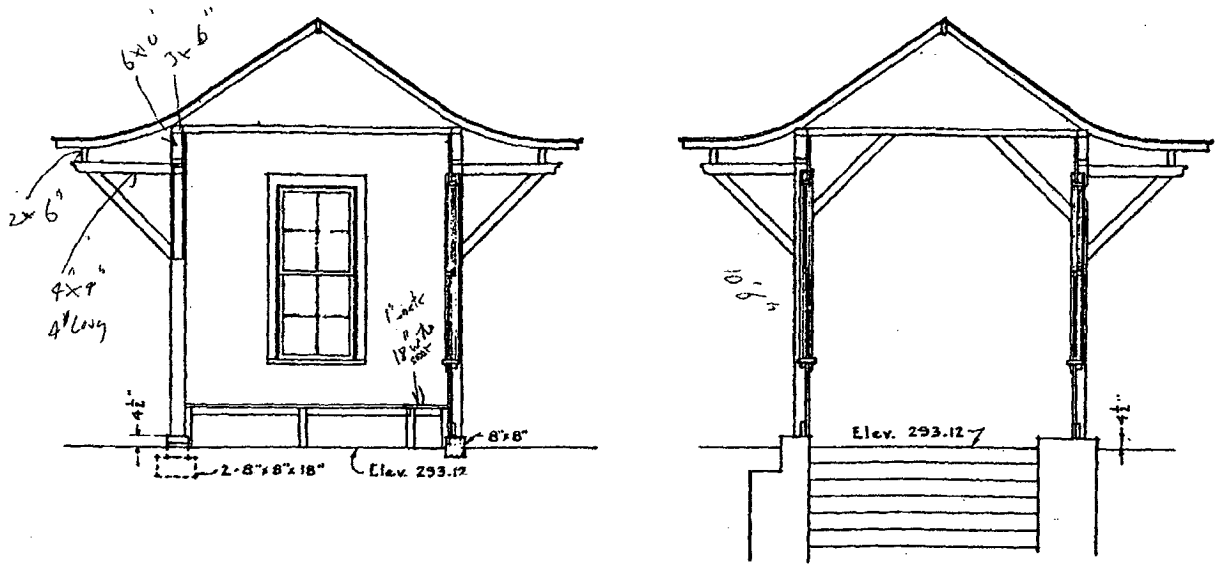
B&O drawing no 16690, track elevation (3-6-1931).



B&O drawing no 16691, east end elevation (3-6-1931).



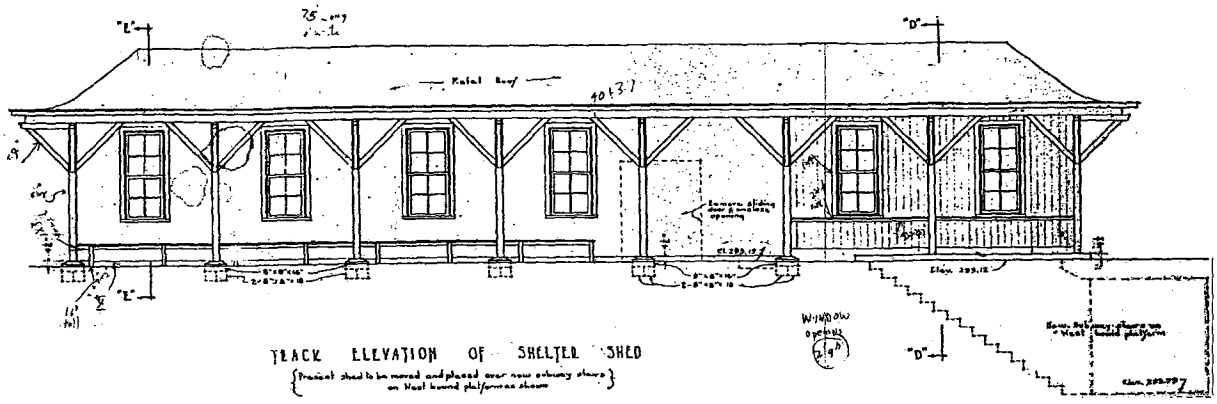
B&O drawing no 16691, Station west elevation (3-6-1931).



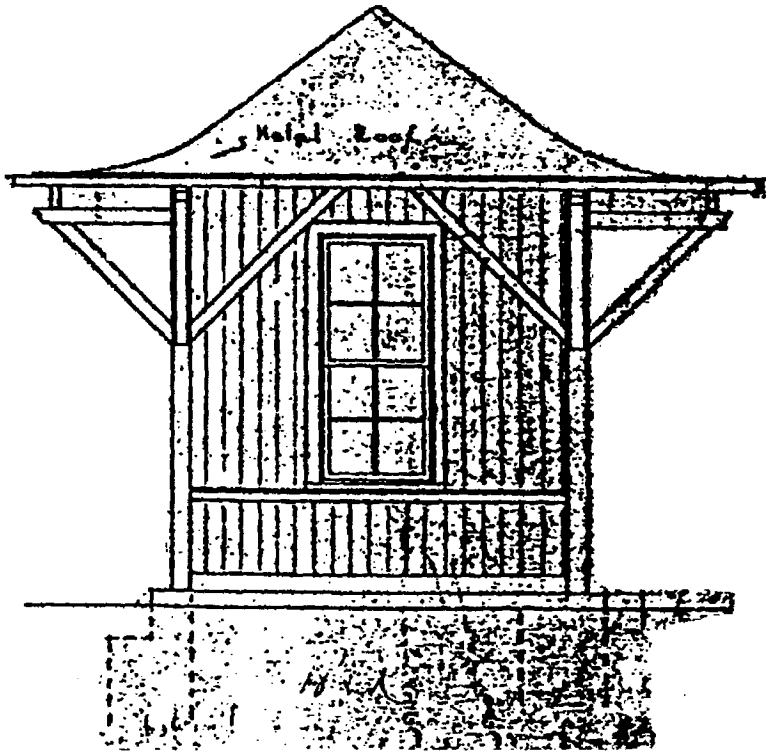
SECTION-"E-E"

SECTION-"D-D"

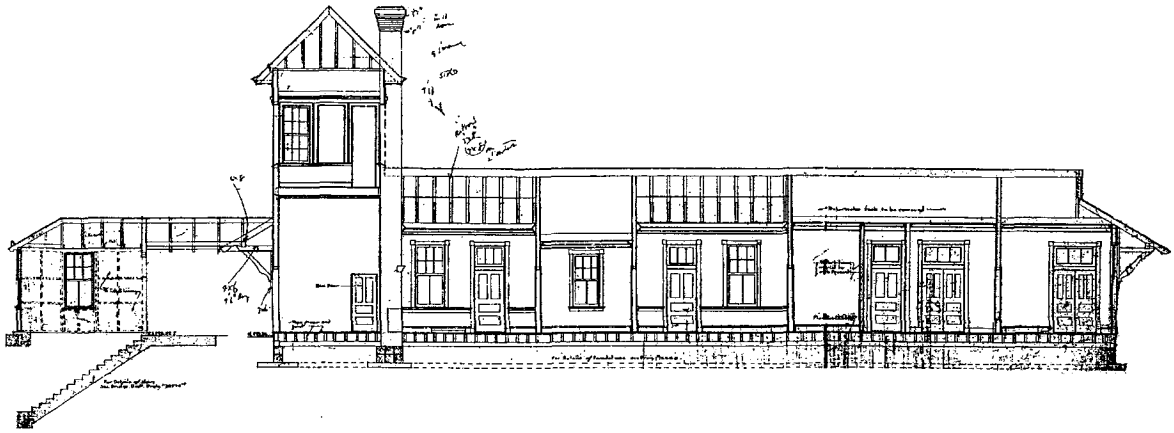
B&O drawing no 16691, Waiting Shelter sections (3-6-1931).



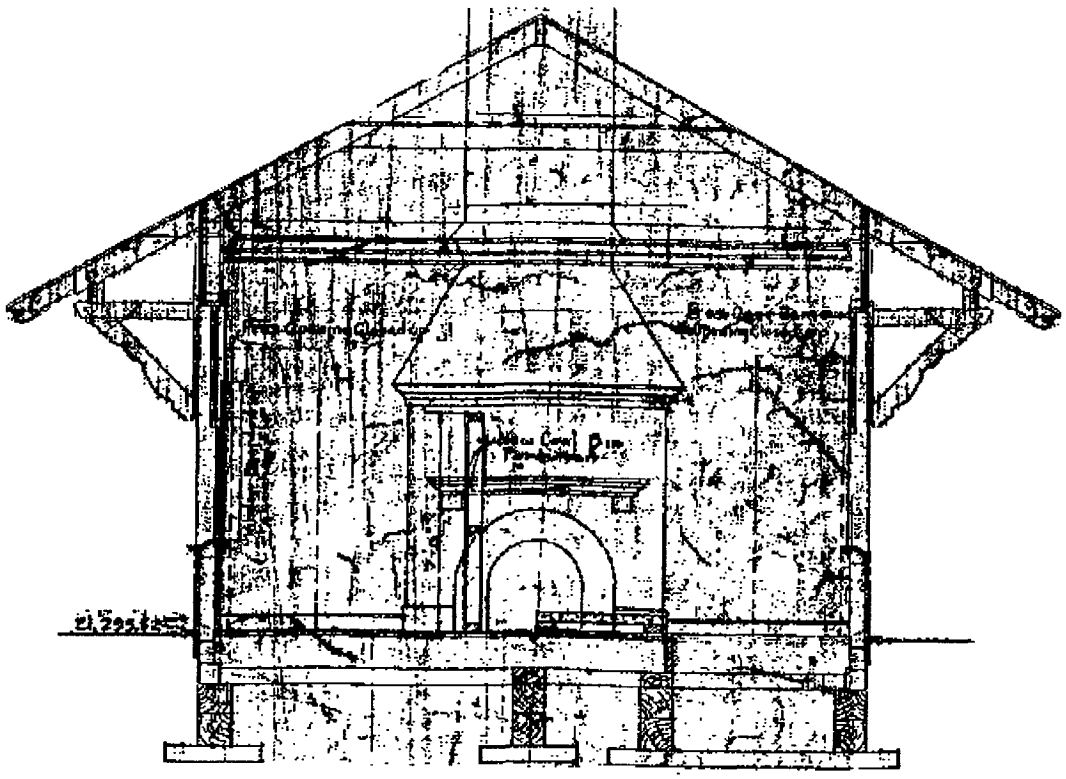
B&O drawing no 16691, track elevation shelter shed (3-6-1931).



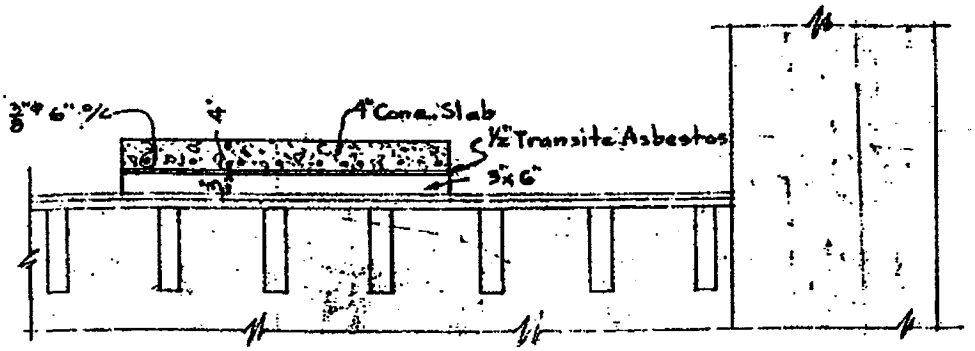
B&O drawing no 16691, east elevation of shed (3-6-1931).



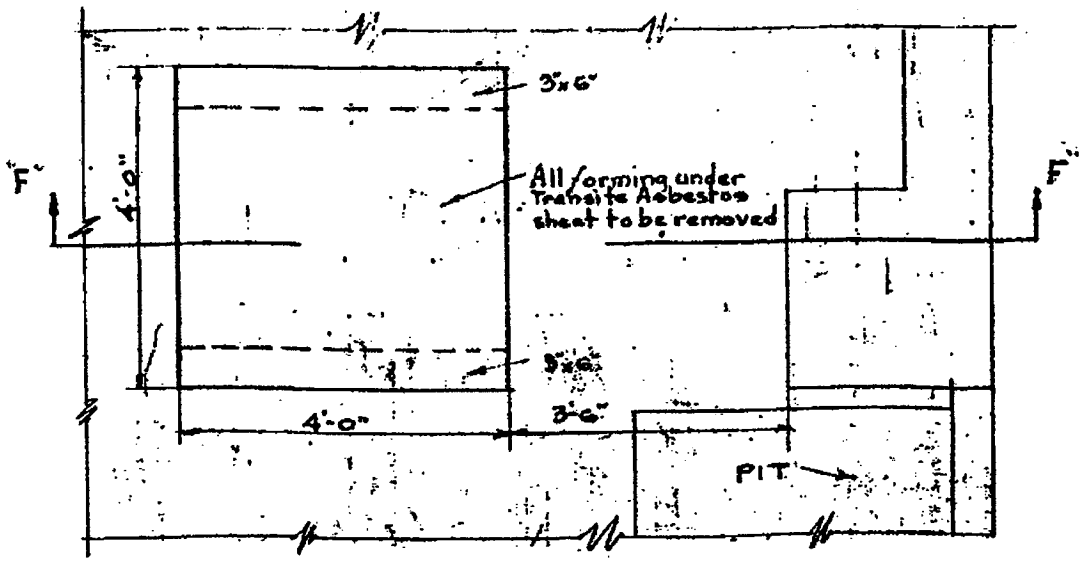
B&O drawing no 16692, long section (3-6-1931).



B&O drawing no 16692, waiting room section "B-B" looking east (3-6-1931).

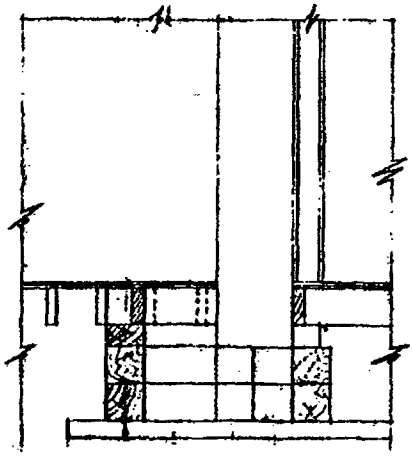


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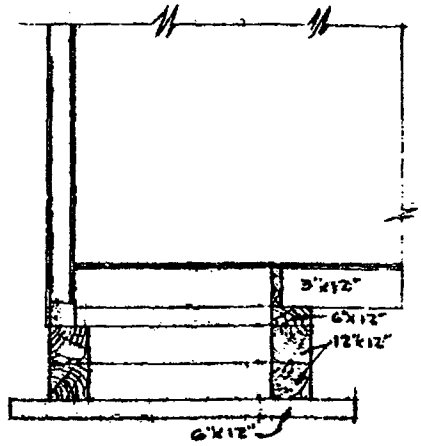


PLAN

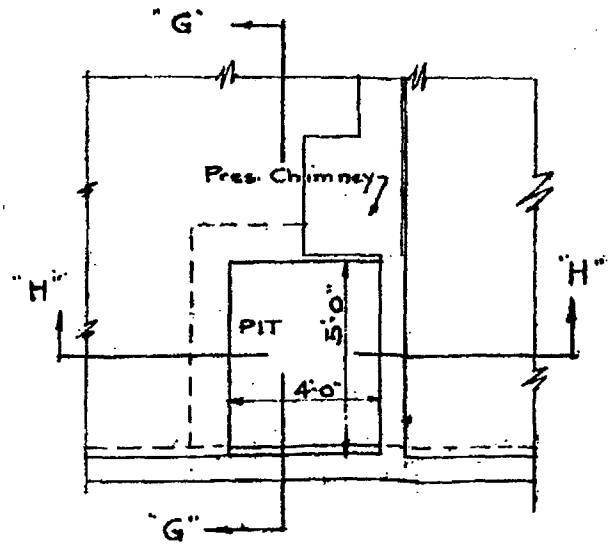
B&O drawing no 16692, details of heating boiler foundation (3-6-1931).



SECTION "H"-"H"

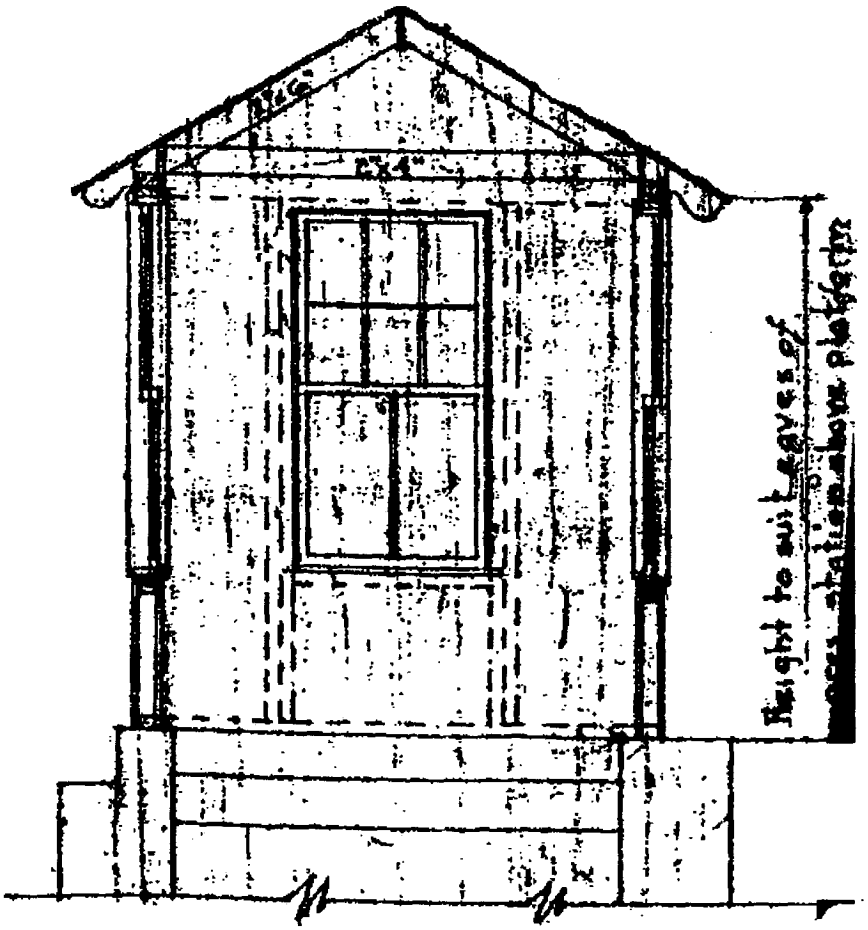


SECTION "G"-"G"



PLAN

B&O drawing no 16692, details of heating pump pit (3-6-1931).



SECTION "K"-"K"
Scale 1/4"=1'-0"

B&O drawing no 16692, Subway Covering Shed (3-6-1931).

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BALTIMORE & OHIO RAILROAD

HARPERS FERRY STATION







The Baltimore & Ohio Railroad, conceived in the 1820s by the merchants of Baltimore as a way to capture a share of the burgeoning domestic trade with the New West, reached Harpers Ferry, (West) Virginia in December 1836. Locked in a sometimes bitter race with the Chesapeake & Ohio Canal Company, the railroad reached the city of Wheeling on the Ohio River in 1852. Although it was considered a marvel of surveying and construction in its time, the B&O's main line from Baltimore to Wheeling incorporated numerous impediments to efficient operation - grades too steep, bridges too light, and curves too sharp. These conditions were the consequence of the need to select initial routes and construction methods based on financial constraints rather than engineering ideals. Compromises were made in order to complete the line quickly to the established end point, thereby initiating a flow of revenue. With the capital thus generated, the railroad company could go back and make improvements along the line to increase the line's capacity and to decrease maintenance costs.

The train station at Harpers Ferry, West Virginia stands as a symbol of this relationship between railroad engineering and railroad economics. Attributed to a design by B&O architect E. Francis Baldwin, the station was built as the finishing touch of a series of improvements made to the main line at Harpers Ferry beginning in 1892. The station was moved from its original location to its present site in 1931 during a second round of improvements. Both sets of improvements significantly modified the historic landscape of Harpers Ferry.

In 1950 the station's distinctive two-story interlock tower was dismantled during a period of financial crisis for the B&O Railroad. The station survived the B&O's takeover by the C&O Railroad in the 1960s, and eventual inclusion into the CSX Corporation in the 1980s. In 2001, the National Park Service acquired the station. Through out these periods, the station has continued to serve the region's rail passengers. Today, it is a stop on both Amtrak and the Maryland Rail Commuter (MARC) line.

Documentation of the Harpers Ferry Station was undertaken during the summer of 2002, and is part of the Historic American Engineering Record (HAER), a long-range program which documents historically significant engineering and industrial works in the United States. HAER (Eric DeLony, Chief) is administered by the Historic American Buildings Survey / Historic American Engineering Record (E. Blaine Cliver, Chief), a division of the National Park Service, U. S. Department of the Interior. Harpers Ferry National Historical Park (Don Campbell, Superintendent) sponsored the project. Park staff Peter F. Dessauer, Bill Hebb, Matthew Graves, and Stephen Capone provided assistance.

The field work, measured drawings, historical report, and photography were completed under the direction of Christopher Marston, Project Leader. The field team consisted of Field Supervisor Walton D. Stowell II (Savannah College of Art & Design), Architects Kristian S. Key (Texas Tech University), Paul M. Giroaard (The University of Illinois at Chicago), and Xenia Olah (ICOMOS-Romania). Park archaeologists John Ravenhorst and Mia Parsons produced the site plan, and Andrew Lee wrote the history. HAER Photographer Jet Lowe produced the large-format photographs. Rob Brzostowski (Shepherd College) served as project volunteer.

HISTORIC AMERICAN ENGINEERING RECORD
WV-86

SHEET 1 OF 14

WEST VIRGINIA

BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
(Harpers Ferry Station)
JEFFERSON COUNTY

DELINEATED BY: WALTON D. STOWELL II, PAUL M. GIROUARD, XENIA OLAH, & KRISTIAN S. KEY, 2002

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

HARPERS FERRY

Traveling Through Time



I. Original Location, 1896 (National Park Service photo)

From 1892 to 1894, the B&O Railroad Company made a series of alterations to its main line that dramatically altered the appearance of Harpers Ferry. These alterations were made in order to reduce the dangerously sharp curves that existed at both ends of the Potomac River bridge. A tunnel was blasted through the base of the steep cliffs on the Maryland side of the Potomac. A new bridge was built to handle the larger and heavier trains. On the West Virginia shore, the track was relocated about 100' south of the river on a course through the site of the old U.S. armory. There, the new roadbed and tracks were built atop a 20' fill that partially covered the armory yard. Permission to use the armory yard was obtained by the railroad from the town in exchange for the B&O's promise to build a new station at Harpers Ferry.

The B&O kept its promise, and the new station was completed in the fall of 1894. Designed by B&O architect E. Francis Baldwin, the station was located in the "Y" formed by the junction of the Valley Branch and the Main Line. The station included two waiting rooms, an agent's office, a ticket office, and a freight office. Pictured here in 1896, the station's most prominent feature was its two-story interlock tower with pyramidal roof on the east end of the structure.



II. Moving the Station, 1931 (National Park Service photo)

By the late 1920s, freight train speeds had so increased that even the curves of the 1894 improvements were becoming dangerous. Beginning in 1930, the B&O began another round of alterations to the Main Line. The principal feature of these improvements was the construction of a new Potomac River bridge that completely eliminated the curvature on the Maryland side. The opposite end of the new bridge met the West Virginia shore considerably upriver from the landing of the previous one, at a point near the western end of the armory grounds. This new configuration resulted in a broad, sweeping curve.

The new alignment on the West Virginia side also necessitated the relocation of the station and waiting shed. In April 1931, the station was moved to its present site. As curious onlookers gathered, the station was lifted onto the old Main Line rails and hauled by a steam crane towards its new home. Once there, the station was lifted with its cribbing and put into place. As seen in this view, the station's chimney and one of its dormers were removed prior to the relocation.



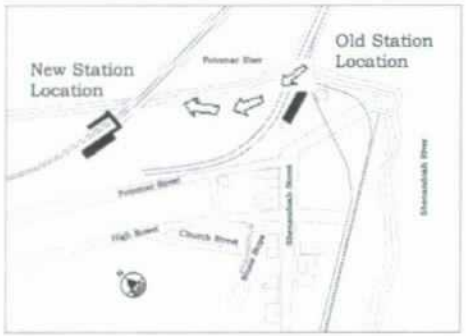
Harpers Ferry Station Chronology 1894 to Present



III. New Location, 1932 (National Park Service photo)

For the first few decades at its new location, the station retained its general structural form. As at the old location, a pedestrian subway connected the station to the passenger waiting shed located on the opposite side of the tracks. Unlike before, however, the interior of the "new" station featured only one large passenger waiting room. The space that was believed to have served as the ladies waiting room was converted to a heating /storage room.

After witnessing a tremendous surge of rail traffic generated by World War II, the B&O Railroad Company experienced a decline that was felt across the entire railroad industry. This period was marked by a drop in freight and passenger traffic as well as a number of physical facilities reductions. Beginning in the early 1950s, the company began consolidating their services and dismantling whatever structures it deemed unnecessary. Though the Harpers Ferry train station was spared, many of the region's other stations were not. For example, virtually all of the company's frame way stations and passenger shelters between Baltimore and Point of Rocks, Maryland were completely dismantled.





IV. Existing Conditions, 2002 (Rob Brzostowski photo)

Though the station did survive the B&O Railroad Company's financial crisis of the 1950s, it did not come away totally unscathed. The appearance of the station was altered drastically beginning in 1950 when it lost its interlock tower. On February 3rd of that year, the interlocking was moved from the tower to the agent's office, and the tower was dismantled between August 1950 and March 1951. The station also lost its trackside bay window and its remaining dormer during the early 1950s.

During recent decades, advances in technology -- including radio communications, highly sophisticated computer systems, and geo-locational satellites -- have allowed railroad companies to centralize their operations. By the mid-1980s the interlock controls at the Harpers Ferry station were relocated to nearby Brunswick, Maryland. The station, presently owned by the National Park Service, continues to serve as a stop along Amtrak's Capitol Limited line and the Maryland Rail Commuter (MARC) line, allowing local residents of the region to commute to the Baltimore-Washington metropolitan area.

WRITTEN BY: ANDREW LEE, ROB BRZOSTOWSKI DELINEATED BY: PAUL EDMUNDS, VENA OLAH, & WALTON E. STOWELL II, 2002

BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
HARPERS FERRY — WEST VIRGINIA
JEFFERSON COUNTY

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

HISTORIC AMERICAN ENGINEERING RECORD
WV-86

SHEET 2 OF 14

List of Extant Baldwin Stations in Maryland

Rockville	1874	HABS MD-228 (& 1884 freight house)
Point of Rocks	1875	HAER MD-14 (reconstruction)
Mount Airy	1876	
Laurel	1884	HABS MD-973
Sykesville	1884	HAER MD-193
Gaithersburg	1884	(& freight house)
Mt. Lake Park	1884	
Oakland	1885	
Ellicott City	1885	(freight house)
Kensington	1891	
Dickerson	1891	(reconstruction)
Brunswick	1891	
Frederick	1891	(addition)
Germantown	1991	(reconstruction)
Frostburg	1891	

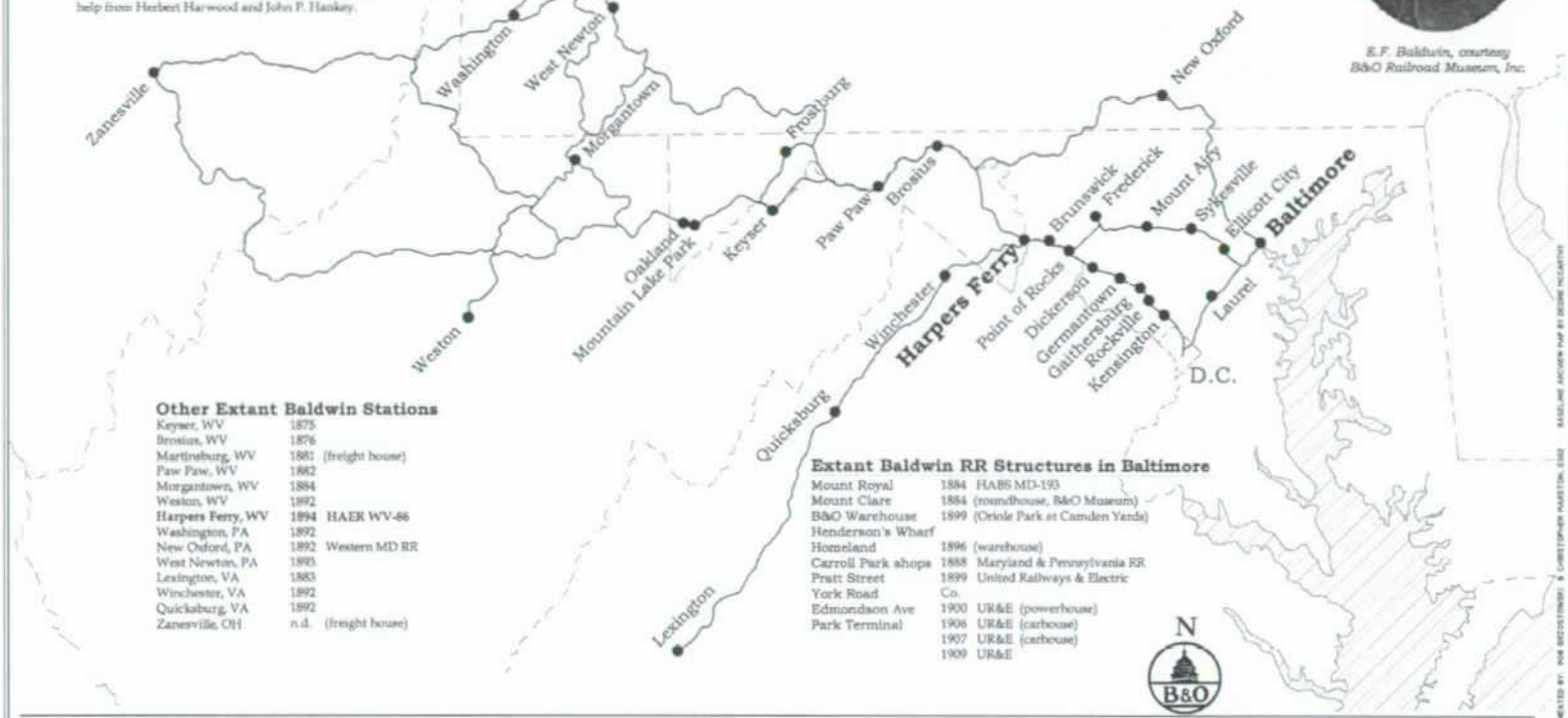
Note: List of stations from list by Carlos Avery, with help from Herbert Harwood and John P. Hankey.

E. Francis Baldwin (1837-1916), a partner at Baldwin & Pennington, was the B&O Railroad's principal architect from 1873 to around 1900. Trained at the Rensselaer Polytechnic Institute in Troy, NY, he was hired to head the B&O's architectural department in 1873. His work included the B&O Headquarters building, Camden Yards Warehouse, Mount Royal Station, Mount Clare Roundhouse, as well as commissions for the Roman Catholic Church and the State of Maryland. He designed many of the stations built on the B&O's newly completed Metropolitan Branch line, beginning with the ornate Point of Rocks Station, completed in 1875 in the Victorian Gothic style. He also designed new structures at existing stops on the Washington Branch line through Laurel, and along the Main Line through Harpers Ferry as far west as Oakland, MD, a resort town developed by the B&O. He was also the architect for the Cumberland & Pennsylvania Railroad and the Washington & Potomac Railroad.

Many of Baldwin's picturesque Queen Anne-style stations are extant and shown in the map below. He produced a standard pattern for the B&O stations, which was used with minor local variations. Utilizing both brick and wood on the exterior, he favored gabled hip slate roofs supported with large wood brackets and often used colored window glass in his designs. Many of his buildings have been restored as centerpieces of downtown preservation projects.



E.F. Baldwin, courtesy B&O Railroad Museum, Inc.



Other Extant Baldwin Stations

Keyser, WV	1875	
Brosius, WV	1876	
Martinsburg, WV	1881	(freight house)
Paw Paw, WV	1882	
Morgantown, WV	1884	
Weston, WV	1892	
Harpers Ferry, WV	**1894**	**HAER WV-86**
Washington, PA	1892	
New Oxford, PA	1892	Western MD RR
West Newton, PA	1893	
Lexington, VA	1883	
Winchester, VA	1892	
Quicksburg, VA	1892	
Zanesville, OH	n.d.	(freight house)

Extant Baldwin RR Structures in Baltimore

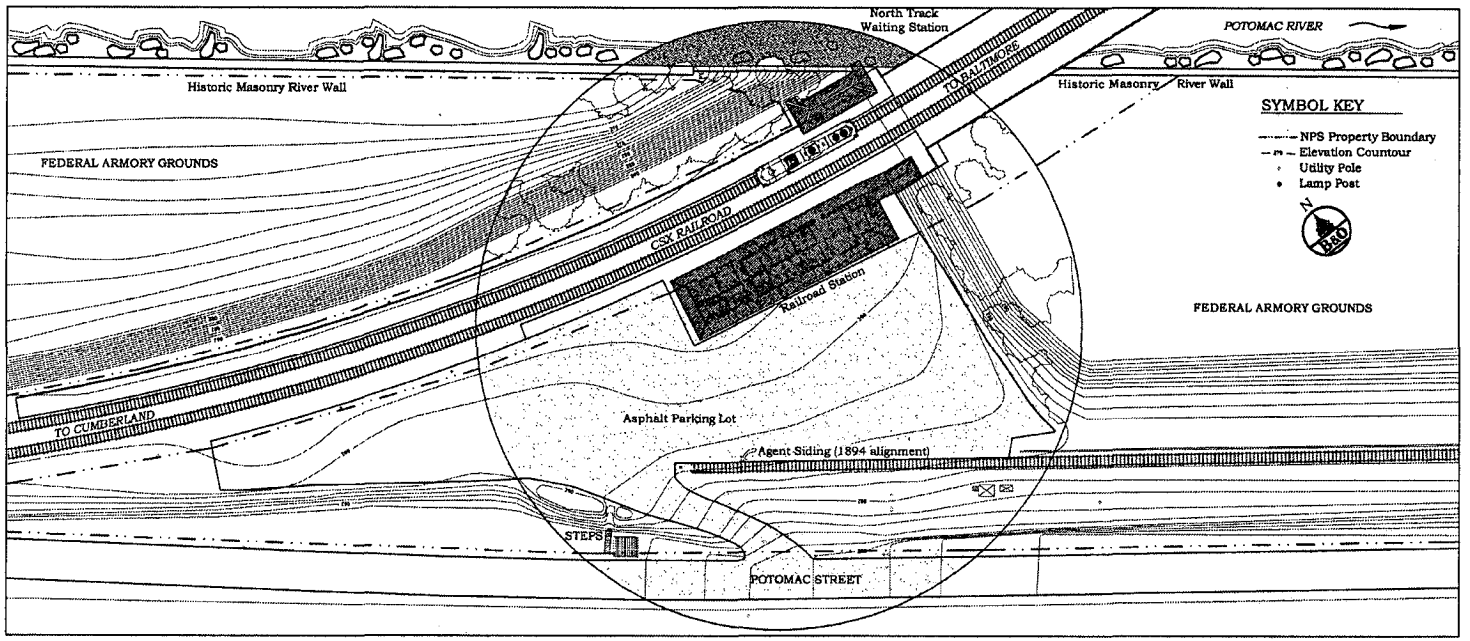
Mount Royal	1884	HABS MD-193
Mount Clare	1884	(roundhouse, B&O Museum)
B&O Warehouse	1899	(Oriole Park at Camden Yards)
Henderson's Wharf		
Homeland	1896	(warehouse)
Carroll Park shops	1888	Maryland & Pennsylvania RR
Pratt Street	1899	United Railways & Electric
York Road	Co.	
Edmondson Ave	1900	UR&E (powerhouse)
Park Terminal	1906	UR&E (carhouse)
	1907	UR&E (carhouse)
	1909	UR&E

BALTIMORE & OHIO RAILROAD HARPERS FERRY STATION
WEST VIRGINIA
JEFFERSON COUNTY
HARPERS FERRY

HISTORIC AMERICAN ENGINEERING RECORD
HAER WV-86
SHEET 3 OF 14

DELINEATED BY: ROB BROSTOWSKI & CHRISTOPHER MARSTON, 2002
BASELINE ARCHIVE MAP BY JESSIE MCCARTHY

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR



Bench Mark M-1:1927, 1929: Elevation 286.49 USCG&GS
Brass Disk set in concrete headwall, west end of B&O Trestle
at the confluence of the Shenandoah and Potomac Rivers.

Fieldwork conducted July 2002

0 5 10 20 40 FEET
0 1 2 4 8 12 METERS
SCALE: 1/300

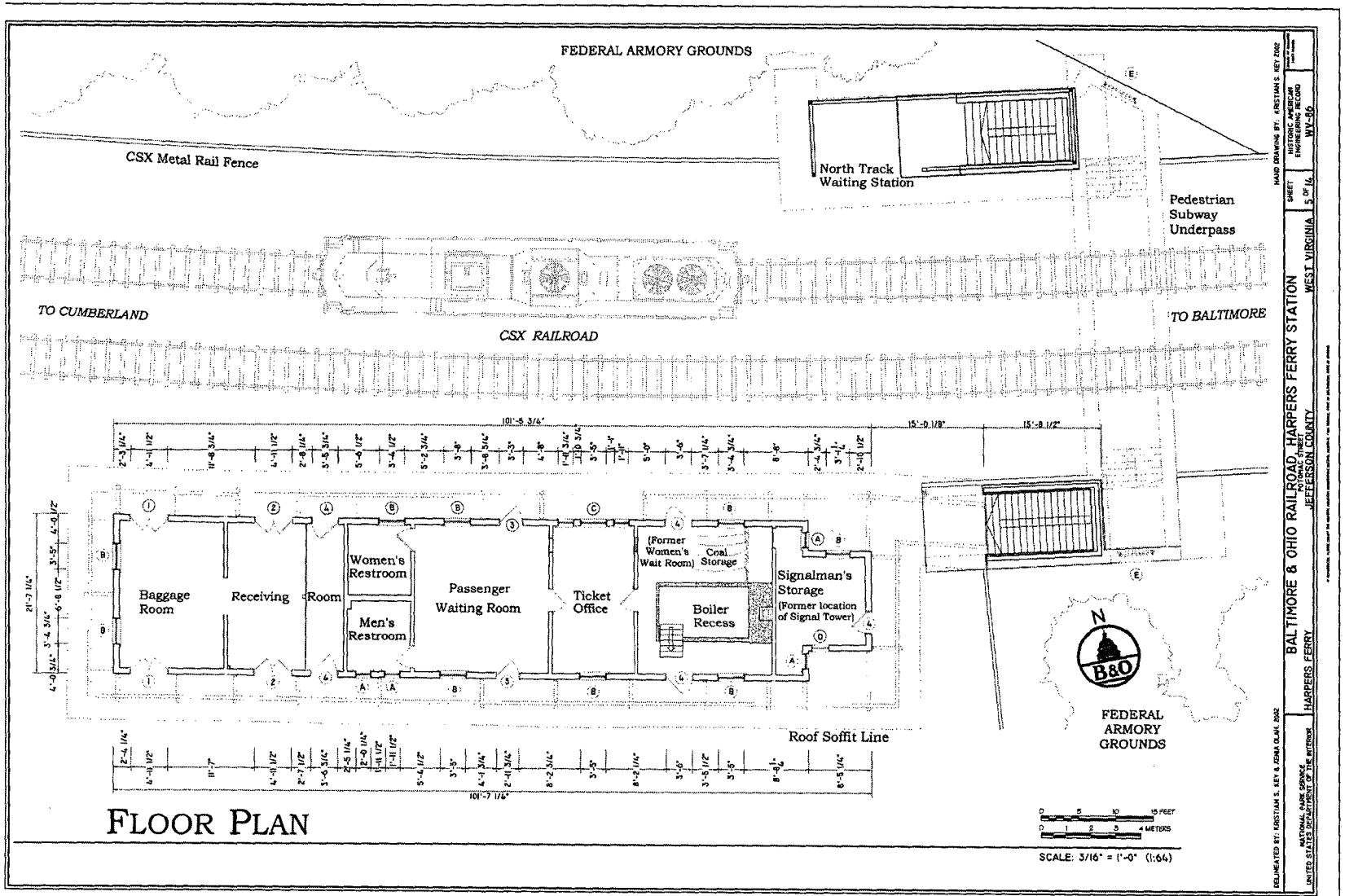
SITE PLAN

SURVEYED BY: JOHN RAVENHORST & ROB BRZOSTOWSKI; DELINEATED BY: JOHN RAVENHORST & XENIA OLAH, 2002
HAND DRAWING BY: KRISTIAN S. KEY

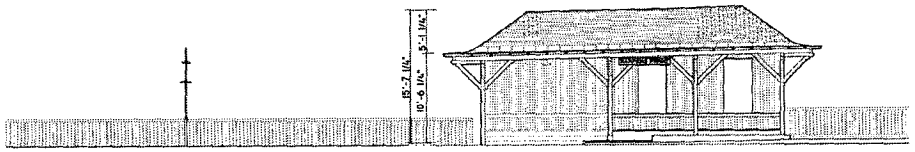
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
POTOMAC STREET
HARPERS FERRY
JEFFERSON COUNTY
WEST VIRGINIA

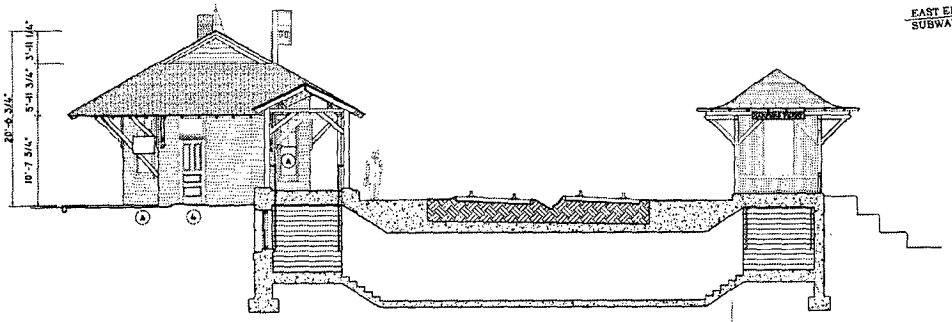
SHEET 4 OF 14
HISTORIC AMERICAN ENGINEERING RECORD
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FEDERAL ARMORY GROUNDS
CSX Metal Rail Fence
North Track Waiting Station
Pedestrian Subway Underpass
TO CUMBERLAND
CSX RAILROAD
TO BALTIMORE
Baggage Room
Receiving Room
Women's Restroom
Men's Restroom
Passenger Waiting Room
Ticket Office
(Former Women's Wait Room)
Coal Storage
Boiler Recess
Signalman's Storage
(Former location of Signal Tower)
Roof Soffit Line
FEDERAL ARMORY GROUNDS
B&O
N
SCALE: 3/16" = 1'-0" (1:64)
BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
HISTORIC AMERICAN ENGINEERING RECORD
WV-66
WEST VIRGINIA
JEFFERSON COUNTY
HARPERS FERRY
SHEET 5 OF 16
HAND DRAWING BY: KRISTIAN S. KEY 2002
DELINEATED BY: KRISTIAN S. KEY & XENIA OLAH, 2002
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

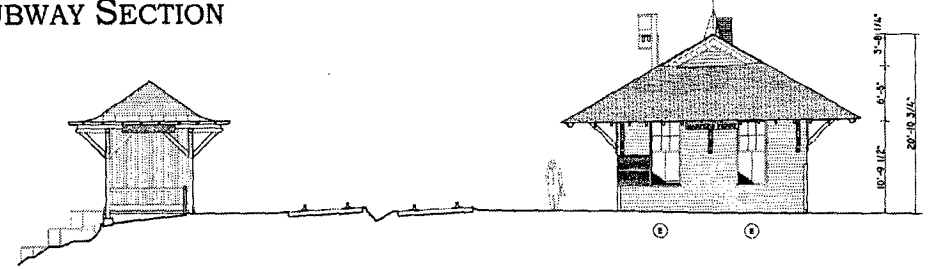
FLOOR PLAN



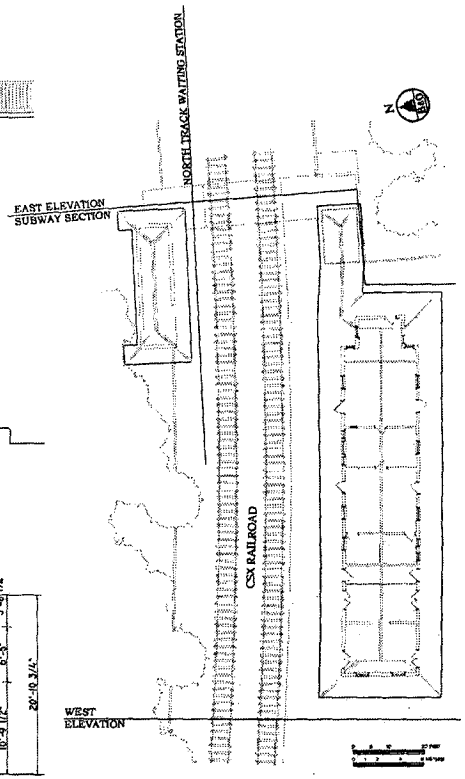
NORTH TRACK WAITING STATION



EAST ELEVATION
SUBWAY SECTION



WEST ELEVATION



SCALE: 3/16" = 1'-0" (1:64)

DELINEATED BY: WALTON STOWELL, III, PAUL M. GIROUARD, XENIA OLAH, KRISTIAN S. KEY, & CHRISTOPHER HARSTON, 2002

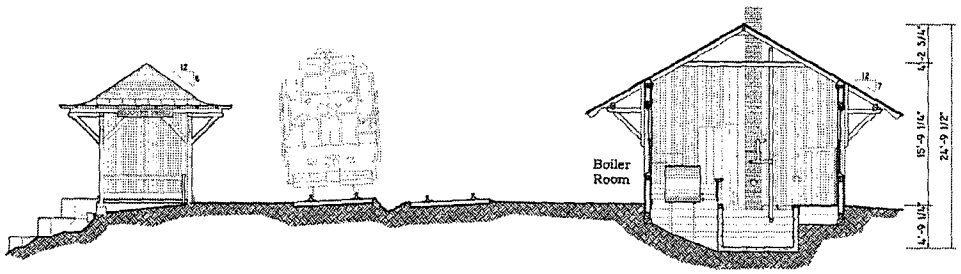
BALTIMORE & OHIO RAILROAD HARPERS FERRY STATION
WEST VIRGINIA
JEFFERSON COUNTY

HARPERS FERRY

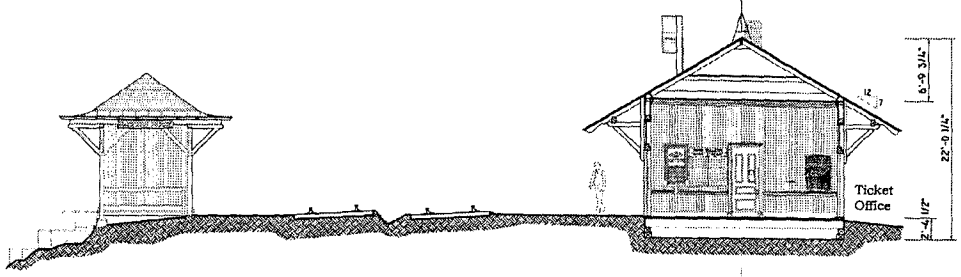
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

SHEET 6 OF 14

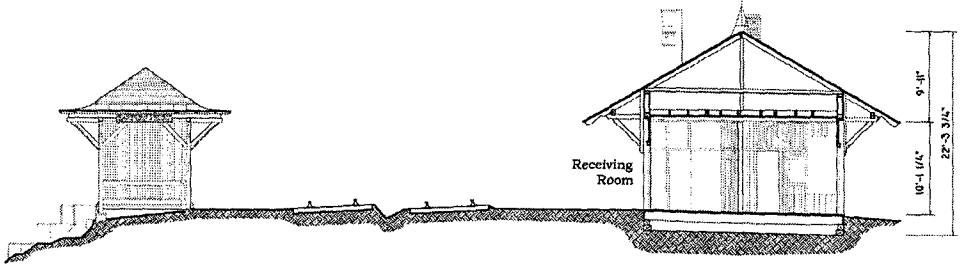
HISTORIC AMERICAN ENGINEERING RECORD
WV-86



SECTION A-A

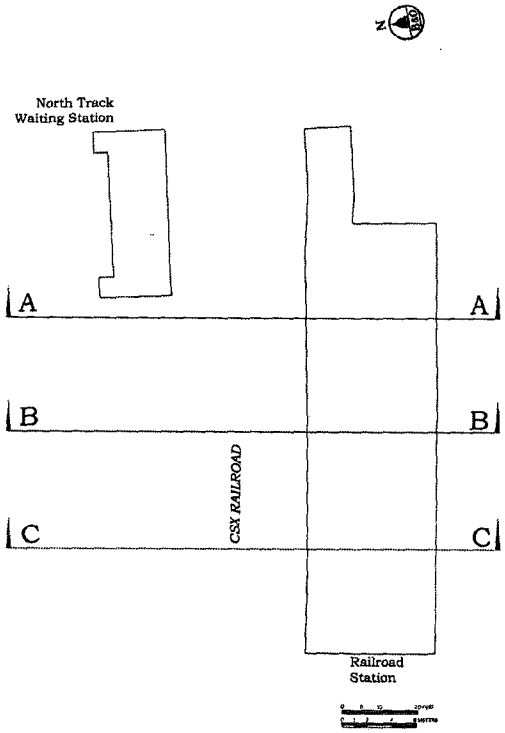


SECTION B-B



SECTION C-C

SCALE: 3/16" = 1'-0" (1:64)



DELINEATED BY: PAUL M. GIROUARD, XENIA OLAH, KARI KEY, & WALTON STOWELL JUNE 2002

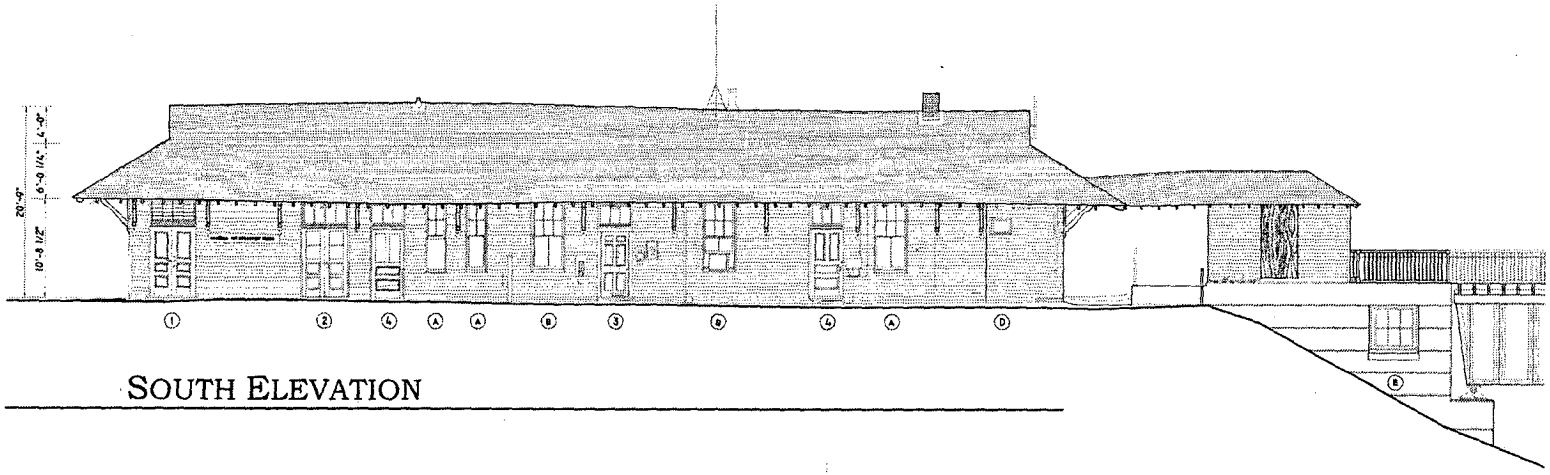
BALTIMORE & OHIO RAILROAD HARPERS FERRY STATION
HISTORIC STRUCTURES
JEFFERSON COUNTY
WEST VIRGINIA

SHEET 7 OF 14

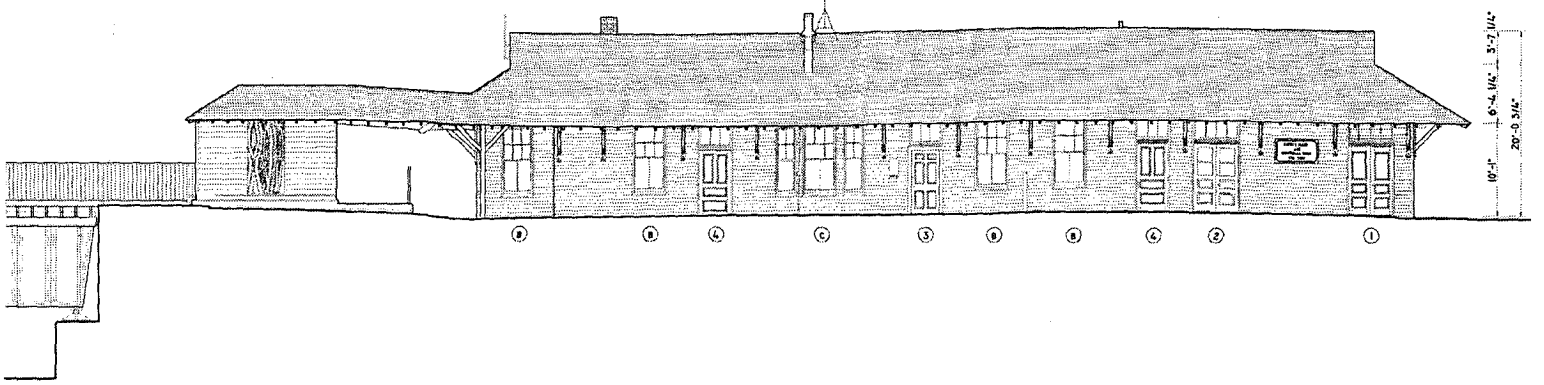
HISTORIC AMERICAN ENGINEERING RECORD
WV-86

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

HARPERS FERRY



SOUTH ELEVATION



NORTH ELEVATION

SCALE: 3/16" = 1'-0" (1:64)

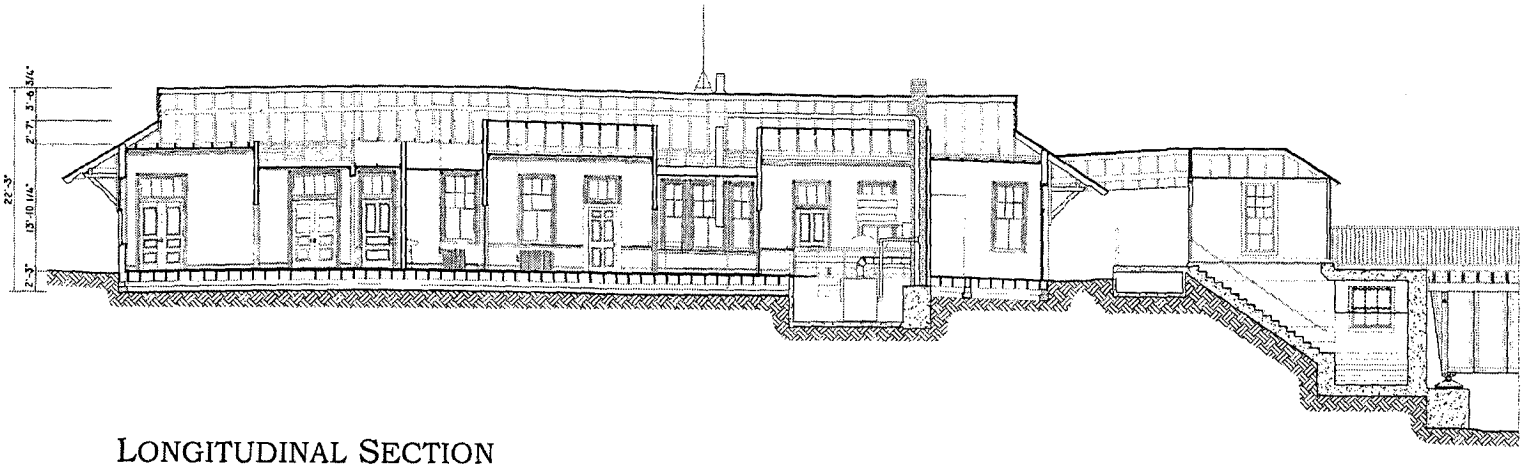
BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
POTOMAC STREET
JEFFERSON COUNTY
WEST VIRGINIA

HISTORIC AMERICAN ENGINEERING RECORD
WV-86

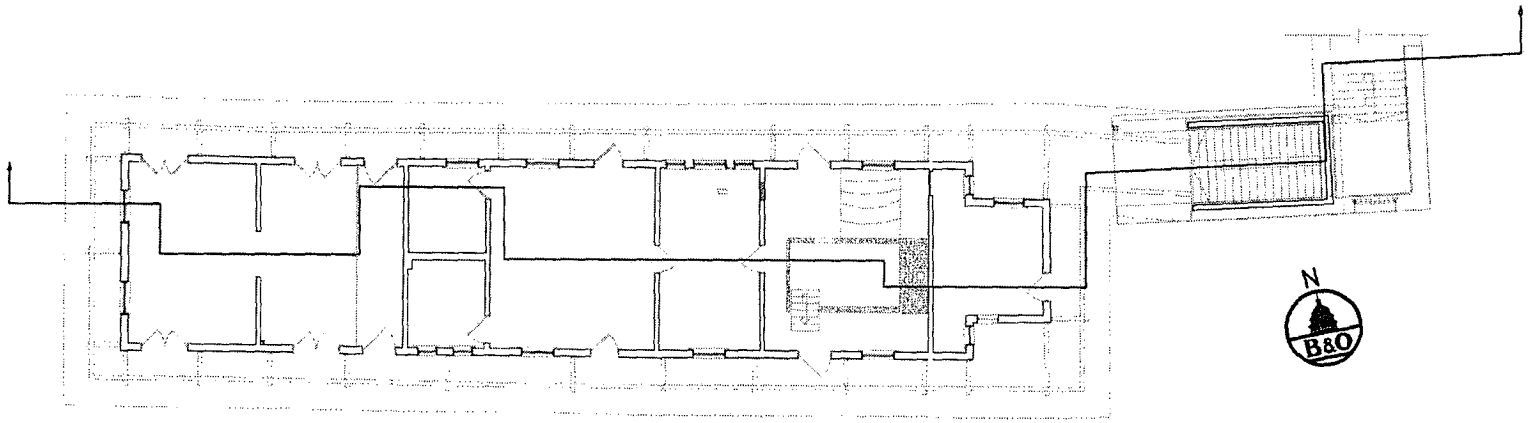
SHEET 8 OF 14

DELINEATED BY: WALTON D. STOWELL II & XENIA OLAH, 2002

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
HARPERS FERRY



LONGITUDINAL SECTION



FLOOR PLAN

N

B&O

0 5 10 15 FEET
0 1 2 3 4 METERS

SCALE: 3/16" = 1'-0" (1:64)

HAND DRAWING BY: KRISTIAN S. KEY

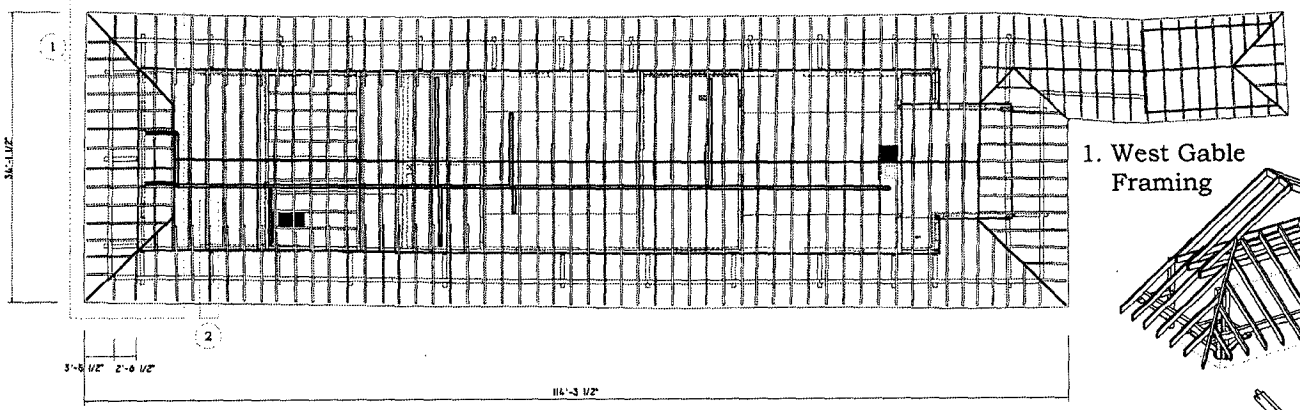
DELINEATED BY: KRISTIAN S. KEY, 2002

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

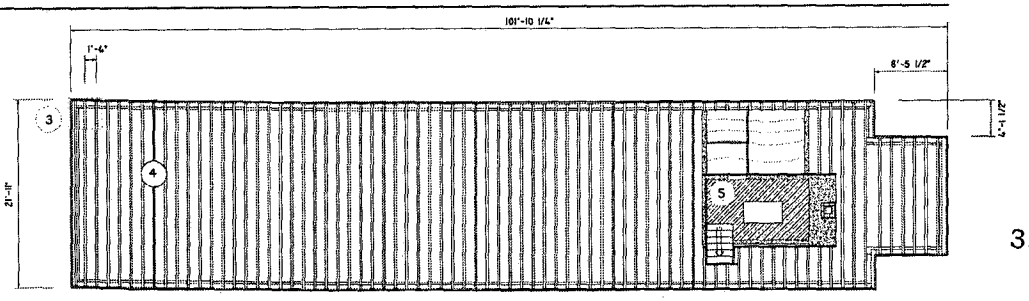
BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
HARPERS FERRY NATIONAL HISTORICAL PARK
JEFFERSON COUNTY
WEST VIRGINIA

SHEET 9 OF 14

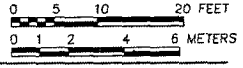
HISTORIC AMERICAN ENGINEERING RECORD
WV-86



ROOF PLAN

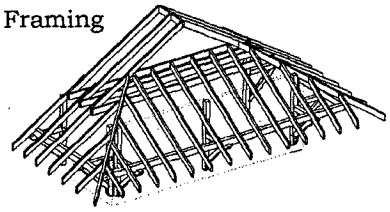


FOUNDATION PLAN

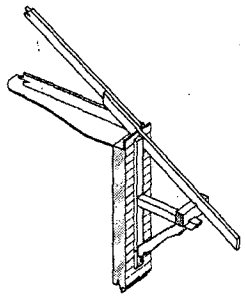


4. Floor joist spacing is 16"o.c. based upon several viewpoints located along the length of the building.
5. Concrete boiler pit recesses below floor level 5'-0". Currently houses a modern oil heating unit. Directly to the north of the concrete housing is a dirt floor dugout area, possibly for coal storage. It is evident that extensive modifications have been made to this area on numerous occasions throughout the history of the building.

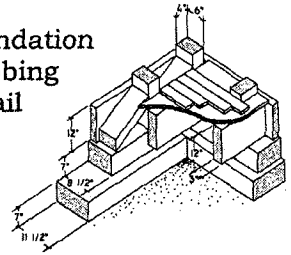
1. West Gable Framing



2. Typical Bracket



3. Foundation Cribbing Detail



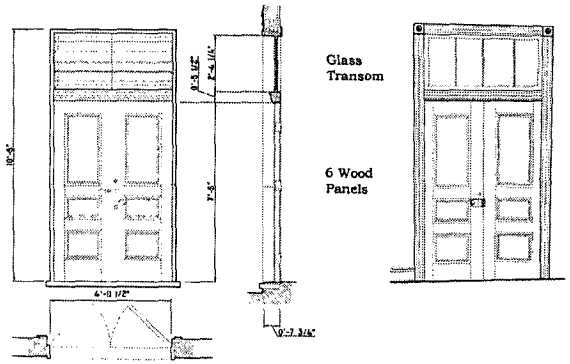
BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
POTOMAC STREET
HARPERS FERRY
JEFFERSON COUNTY
WEST VIRGINIA

SHEET 10 OF 14

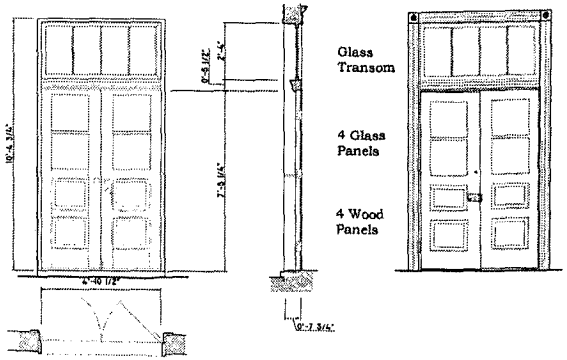
HISTORIC AMERICAN ENGINEERING RECORD
WV-86

DELINEATED BY: KRISTIAN S. KEY & XENA OLAH, 2002

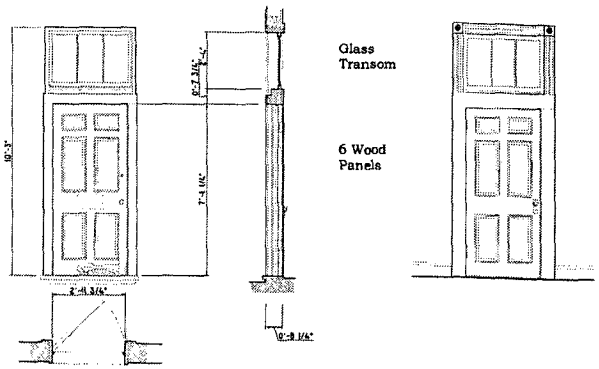
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR



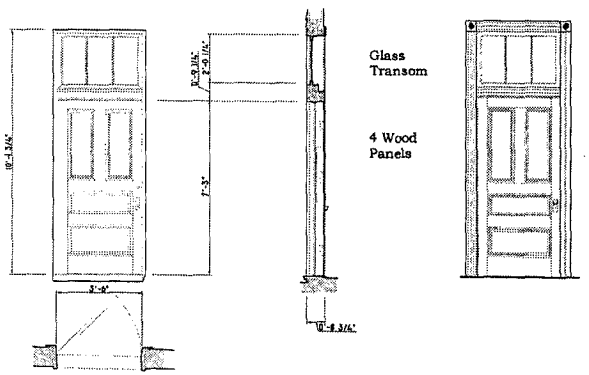
DOOR TYPE 1



DOOR TYPE 2



DOOR TYPE 3



DOOR TYPE 4

0 1 2 3 4 5 FEET
0 2 METERS

SCALE: 1/2" = 1'-0"

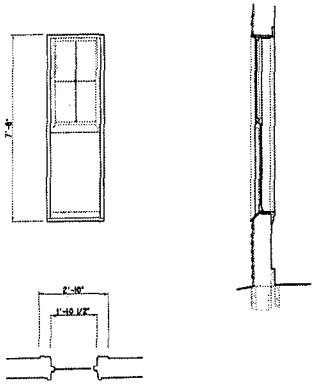
DELINEATED BY: WM. TOM D. STOWELL R. 2002

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
POTOMAC STREET
HARPERS FERRY
JEFFERSON COUNTY
WEST VIRGINIA

SHEET 11 OF 14

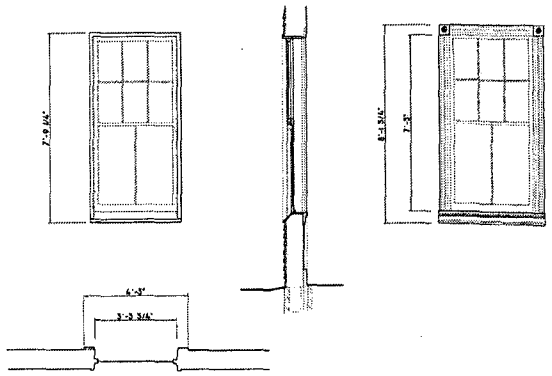
HISTORIC AMERICAN ENGINEERING RECORD
WV-86



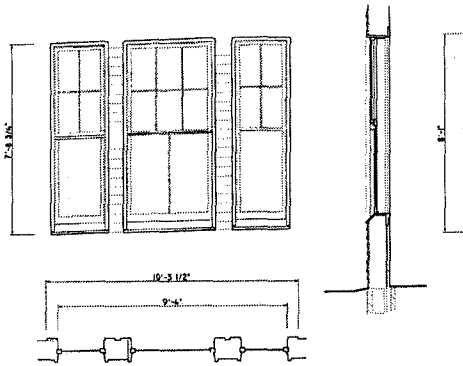
Notes
1. The Type C window is a grouping of Types A & B.

2. Many windows have been removed from the original structure. Missing windows include: 11 interlock tower windows, dormer windows, and many waiting shed windows.

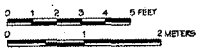
WINDOW TYPE A (4 TOTAL)



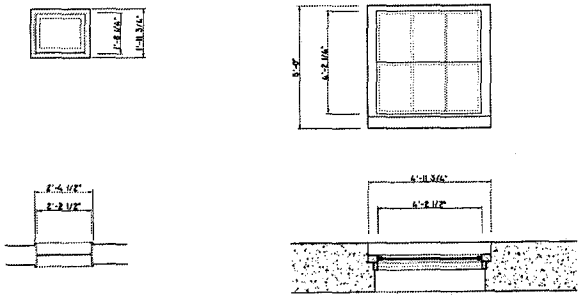
WINDOW TYPE B (9 TOTAL)



WINDOW TYPE C (1 TOTAL)



SCALE: 1/2" = 1'-0"



Type E windows found on the pedestrian subway.

WINDOW TYPE D (1) & TYPE E (2)

DELINEATED BY: WALTON D. STOWELL II. 2002

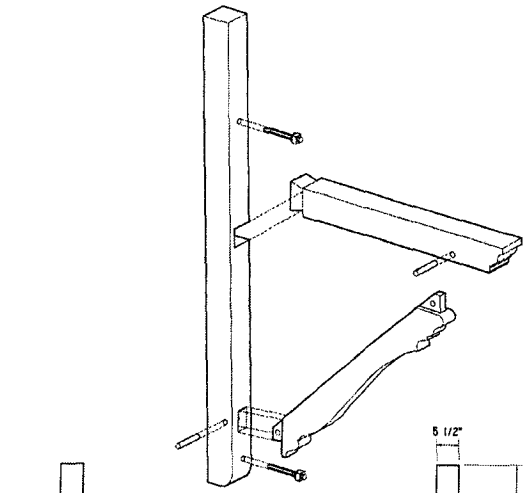
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
POTOMAC STREET
JEFFERSON COUNTY
WEST VIRGINIA

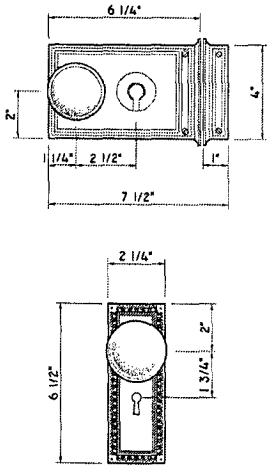
HISTORIC AMERICAN ENGINEERING RECORD
WV-86

SHEET 12 OF 14

HARPERS FERRY

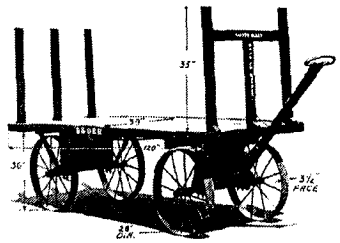


Support Bracket Detail



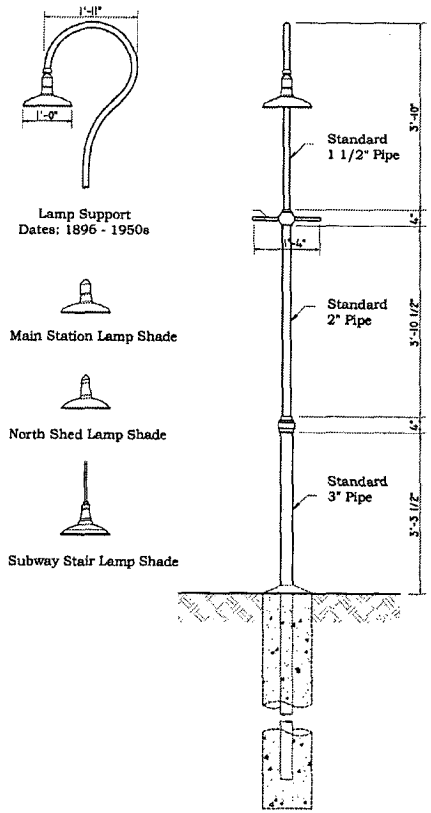
Door Hardware Detail

SCALE: 6" = 1'-0" (1:2)



Photograph from Rob Brzotowski Collection

Baggage Cart Detail



Lampost Detail

0 1 2 3 FEET
0 50 100 CENTIMETERS

SCALE: 1" = 1'-0" (1:12)

DELINEATED BY: KRISTIAN S. KEY & WALTON D. STOWELL III, 2002

HAND DRAWING BY: KRISTIAN S. KEY

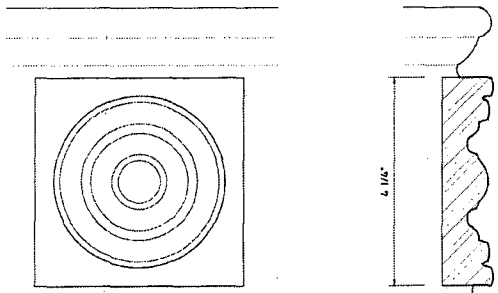
BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
POTOMAC STREET
JEFFERSON COUNTY
WEST VIRGINIA

SHEET 13 OF 14

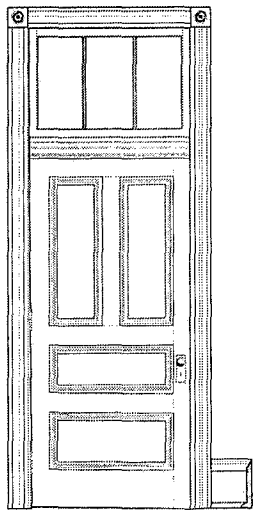
HISTORIC AMERICAN ENGINEERING RECORD
WV-86

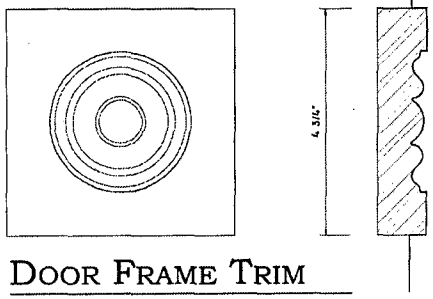
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

HARPERS FERRY

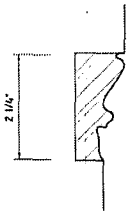


CABINET TRIM
Square Block w/ Bullseye

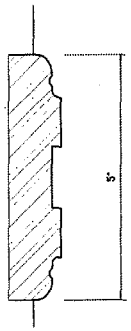




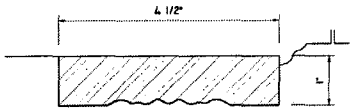
DOOR FRAME TRIM
Square Block w/ Bullseye



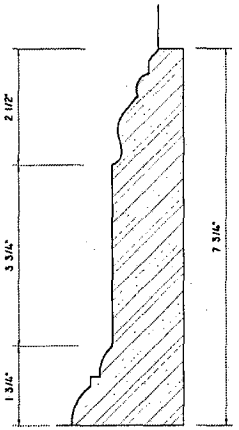
DOOR PANEL TRIM



DOOR HEADER TRIM

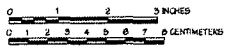


DOOR FRAME TRIM



BASEBOARD

MOULDING PROFILES - Baggage Room



SCALE: 12" = 1'-0" (1:1)

HAER DRAWING BY: KRISTIAN S. KEY

SHEET: 14 OF 14

HISTORIC AMERICAN ENGINEERING RECORD WV-86

BALTIMORE & OHIO RAILROAD, HARPERS FERRY STATION
HARPERS FERRY, JEFFERSON COUNTY, WEST VIRGINIA

DELINEATED BY: WALTON D. STONELL III, 2002

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

ICC Valuation Survey, Harpers Ferry Station, 1919.

Appendix B consists of a transcription of valuation records created by the Interstate Commerce Commission (ICC), Bureau of Valuation. ICC records provide detailed documentation pertaining to all aspects of the railroads of the United States from the agency's creation in 1887 until the 1960s. Most of the valuation records were created during the period 1915-20 by ICC and railroad employees who undertook a massive project to inventory almost every aspect of the railroad system.

The valuation records are in the custody of the College Park, Maryland facility of the National Archives and are part of Record Group 134, *Records of the Interstate Commerce Commission.* They are arranged by name of the railroad, there under by types of records, there under by valuation section number, and finally by volume number. The general subject categories of the records are land, engineering, and accounting reports and supporting documentation. The engineering field notes are particularly valuable for researchers because of the detailed information they often contain: written notes concerning construction specifications of bridges and buildings, drawings and blueprints, and photographs. The records utilized in this report are engineering field notes for the period 1914-29, contained in section WV 36.1 of the Baltimore and Ohio Railroad group, Volume 61.

The inventory of the B&O's facilities at Harpers Ferry, West Virginia was made August 14-21, 1919. The bridge and building notes cover all B&O property in the town, including the passenger station, subway, shelters, freight storage building, as well as miscellaneous structures such as a cattle pen and pump house. Another portion of these records details the B&O's facilities at Island Park, a twenty-acre resort and amusement park on Byrnes Island in the Potomac. Following is a transcription of pages 1-7, that portion of the records covering the passenger station and features of the immediate depot area. Unfortunately, no key or legend was provided in the original document to decipher the abbreviations used in the survey.

Interstate Commerce Commission
Bureau of Valuation

Date: August 19, 1919
Carrier: Baltimore & Ohio R.R.
Station: 3746+0 **Account No.:** 16
Location: Harpers Ferry, W. Va.

Character and Description of Property

Pass. Station & Tower — Age: 1894 Remaining Service Life: 36
Maintenance: N Source of Data: Carrier

See Plans – Sheets 2, 3, 4
on file Office of Chief Engr – Balt. Md.
File #1058 for details
No copies available for I.C.C. File

Station similar to Type W-4 Exceptions:

Pass.	62.9' x 21.7' x [(14.5' + 21.5') ÷ 2]	
Tower:	13.8' x 8.4' x [(31.5' + 39.5') ÷ 2]	
Tower:	13.8' x 5.4' x [(14.5' + 23') ÷ 2]	C.F [Cubic Feet]: 43596
Toilet:	10.2' x 4.6' x 13.8' A	
Bay:	[(12.5' + 6.7') ÷ 2] x 4.8' x 13.8' A	
Baggage & X'press:	30.6' x 21.7' x [(14.5' + 21.5') ÷ 2]	
Dormers (2):	12' x 5' x 8/3'	

1. 12 – V (Rubble) D = 10' under area 33' x 21.7' — CF ?????
   Floor of brick – No stairway – Longit. rubble wall instead of piers
   1c8 – D = 4' (Rubble) under remainder — CF 6545

2 – 3. As type – except the dado.

4. 4e – Draining as type except on chamfered brackets – outplate & rafters (cont.)

[page 2]
Pole gutters all around – G.1 downspouts
G.1 finial C.1 box protection on downspouts

5. As type – G.1 diamond mesh guards on Bay & X'room windows

6. As type except Rafters are 3" x 8" – 2' Joists 3" x 12"
on 16" – Upper joists 3" x 10" – See filed plans for details.

7. 7g. Maple in Tower

8. As type thru-out except T.9 HB (?) ceilings in
Waiting Room supported on Exposed dressed &
chamfered rafters – Mansard ceiling
Two additional partitions of type 8c
See filed plans for details.

10. 2 of 10b, 1 of 10d

11. 11a2R C.F: 34836

12. 21 of 12a1

15. 8 of 15f, 4 of 15g – oak
Signs – 2 of Type WS – 1

Furniture – Station – Type PS 550 $550.00
Furniture – Tower – Type T80 $80.00

[page 3]
Subway at Pass. Sta. Age: 6 Remaining Service Life: 94
Maintenance: N Source of Data: Carrier

Clerks Carrier Plan 9867
1 sheet

Note – Clerks Plan in all respects
Compute Subway 73.5' long
Compute Covered Stairway 23.5' long
Compute Landing, etc. 9' long
Compute Drainage

12. 5 of 12a1 in subway

Note – Three sided & Four sided
shelters shown in above
plan have been typed
and are inventoried
in Notes

[page 4]

Four Sided Shelter **Age:1912** **Remaining**
Service Life: 44
West Bound **Maintenance: N** **Source of**
Data: Carrier

Type W – 31B
20.5' x 10' x [(10.5' + 13.5') ÷ 2] C.F. 2460

1.	See item 7.	G = 2' av.		
2.	Jack			
4.		4c – Gutters & Spouts		
7.	2PW – 2	20.5' x 10'		S.F. [Square Feet]: 205
8.	Sheathed	T.G.& B. walls & ceilings	fbm: 1082	
12.	2 of 12a1 – (conduit)			No.: 2
15.	30 of 15a	Settee – H.P.		L.F.: 30
		Furniture Type P.S.-21	$21.00	

3 Sided W.B. Shed **Age:1912** **Remaining**
Service Life: 44
Maintenance: N Source of Data: Carrier

Type W-32 49' x 10' + [(10.5' + 13.5') ÷ 2]
G = 2' av. C.F.: 5880

1.	See item 7		
4.	4c – Gutter & spouts		
5.	Windows – on 10' centers – D. H. & weighted		
7.	2 PW – 2	49' x 11.5'	S.F.: 564
12.	3 of 12a1		No.: 3
15.	59' of 15a	H.P. settee	L.F.: 59

[page5]

Misc. Structures – Sta. Grounds

Platforms – Type PB – 4 **Age: 8** **Remaining**
Service Life: 42
Maintenance: N Source of Data: Carrier

1037' x 8' +110' x 22'
59.5' x 36' } S.F.: 20219
156' x 16' + 75' x 42' + 30' x 95'
50' x 4' + 26' x 30' + 30' x 15'

Type 2PW – 1 32' x 4' + 16' x 9' + 42' x 55' S.F.:
23' x 12' + 2 pcs upon 3' x 3.5' x ¼" lbs: 214

[End of valuation.]



Harpers Ferry Train Station, West Elevation, 2003.



Harpers Ferry Train Station, North-west Elevation, 2003.



Harpers Ferry Train Station, North-west corner, looking east, 2003.



Harpers Ferry Train Station, North Elevation, looking east. The Westbound Waiting Shelter is seen across the tracks to the north. 2003.



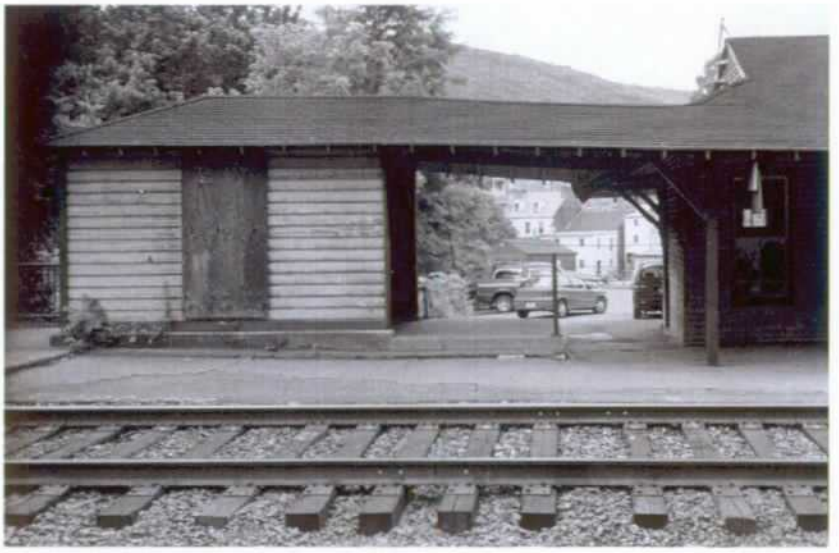
Harpers Ferry Train Station, North Elevation, west portion. 2003.



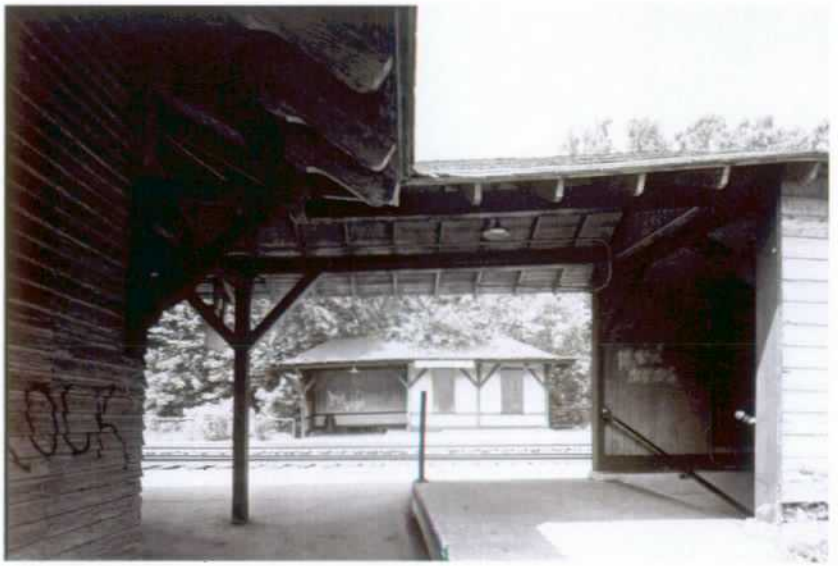
Harpers Ferry Train Station, North Elevation, central portion. 2003.



Harpers Ferry Train Station, North Elevation, west side. 2003.



Harpers Ferry Train Station, North Elevation, easternmost portion, covering the stairs to the subway. 2003.



Harpers Ferry Train Station, looking north toward the Westbound Waiting Shelter's south elevation. 2003.



Harpers Ferry Train Station, North elevation seen from the northeast. 2003.



Harpers Ferry Train Station, North and East Elevations. The Westbound Waiting Shelter is seen in the far right of the photograph. 2003.



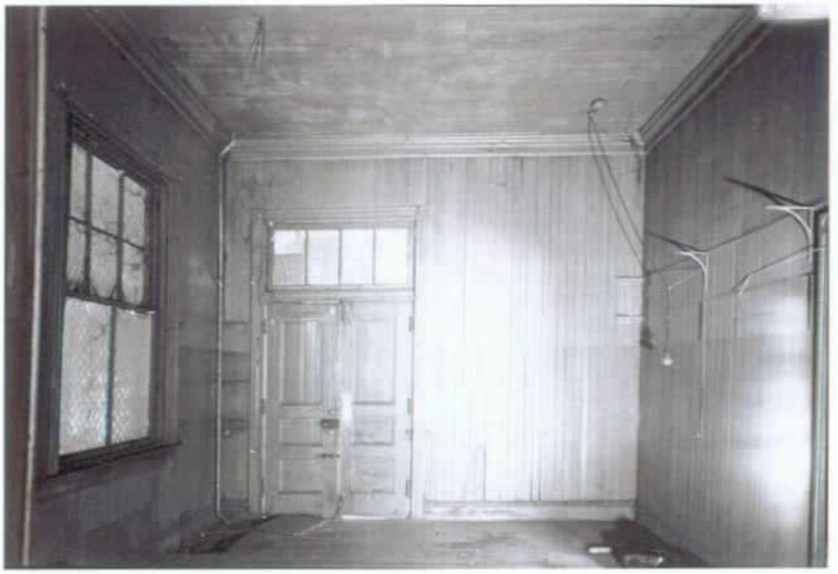
Harpers Ferry Train Station, East Elevation, showing relationship to the tracks and the Westbound Waiting Shelter. of the eastern covering to the stairs to the tunnel. 2003.



Harpers Ferry Train Station, west side of the eastern covering to the stairs to the tunnel. Westbound Waiting Shelter is seen beyond. 2003.



Harpers Ferry Train Station, South Elevation. 2003.



Harpers Ferry Train Station, Interior, Express Room, 01, looking north. 2003.



Harpers Ferry Train Station, Interior, Express Room, 01, looking south. 2003.



Harpers Ferry Train Station, Interior, Baggage Room, 02, looking north. 2003.



Harpers Ferry Train Station, Interior, Baggage Room, 02, looking south. 2003.



Harpers Ferry Train Station, Interior, Baggage Room, 02a, looking north. 2003.



Harpers Ferry Train Station, Interior, Waiting Room, 05, looking northeast. 2003.



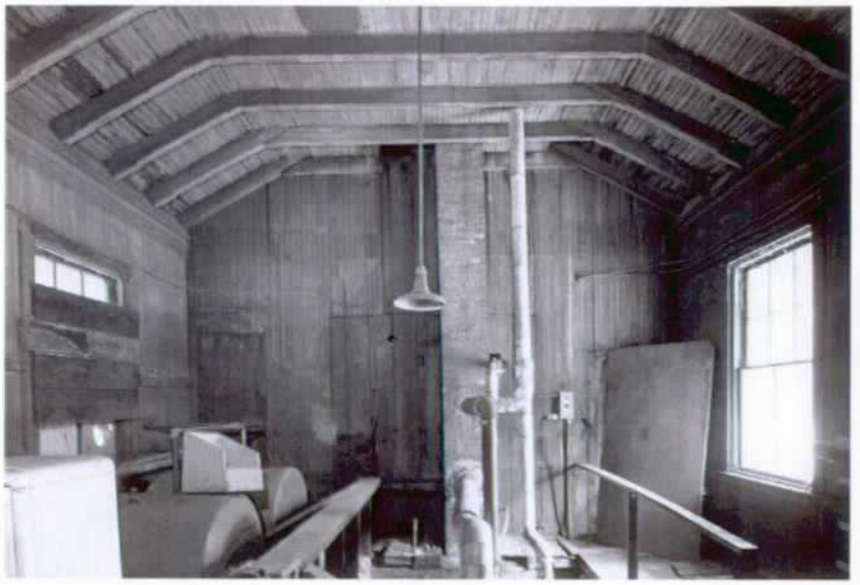
Harpers Ferry Train Station, Interior, Waiting Room, 05, looking southwest. 2003.



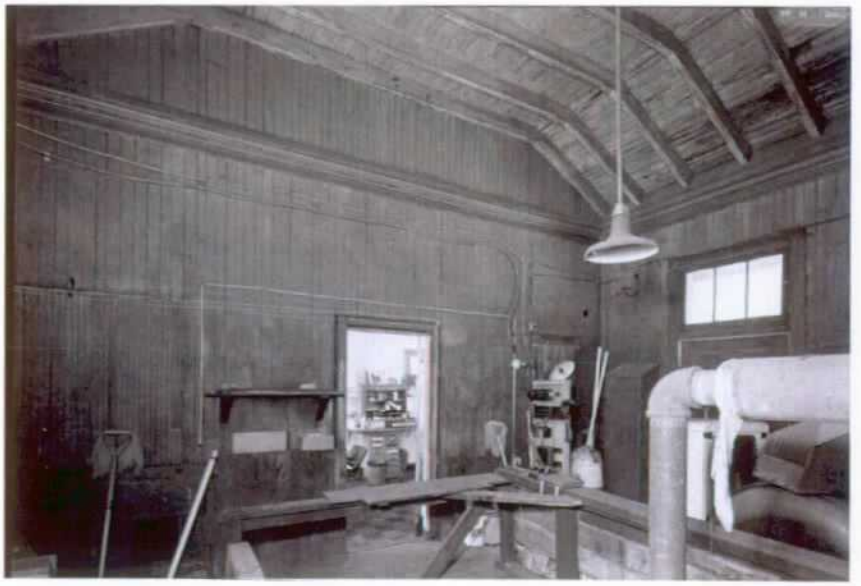
Harpers Ferry Train Station, Interior, Ticket Office, 06, looking northeast. 2003.



Harpers Ferry Train Station, Interior, Ticket Office, 06, looking northwest. 2003.



Harpers Ferry Train Station, Interior, Mechanical Room, 07, the original Women's Waiting room, looking east. 2003.



Harpers Ferry Train Station, Interior, Mechanical Room, 07, the original Women's Waiting room, looking northwest. 2003.



Harpers Ferry Train Station, Interior
Relay Room, 08, looking east

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The reports listed below are available at the Harpers Ferry National Historical Park, Harpers Ferry, WV, or at the National Park Service, Denver Service Center, Denver, CO.

U.S. Public Health Service, Division of Federal Occupational Health, Philadelphia Office. Asbestos Assessment Report prepared for NPS-HAFE, Harpers Ferry, WV; Building #BA-02-01; report dated September 9, 2002.

_____. Hazardous Materials Report prepared for NPS-HAFE, Harpers Ferry, WV; Building #BA-02-01, Site Code HFTS—BA-02-01; report dated September 9, 2002.

_____. Lead Bulk Sampling Report prepared for NPS-HAFE, Harpers Ferry, WV; Building #BA-02-01, Site Code HFTS—BA-02-01; report dated September 9, 2002.

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Damaged Siding Treatment Study
Baltimore & Ohio Railroad
Harpers Ferry Station
Harpers Ferry National Historical Park



Prepared By: Richard Chilcoat
Project Manager
Architectural Preservation Division
Design, Construction and Facility Management
Northeast Region

Project Background

The Northeast Region Historic Architecture Program is conducting a painted finishes study for the exterior and interior of the Baltimore & Ohio Railroad Station at Harpers Ferry National Historical Site. In conjunction with the painted finishes study an investigation of damaged siding on the structure was conducted by Northeast Region Architectural Preservation Division Project Manager Richard Chilcoat. The purpose of the investigation was to conduct a condition evaluation of the wood, test various repair methods and make treatment recommendations. An initial site visit was held on February 25, 2003 to review the project scope and conduct an initial examination of the damaged siding and trim elements.

Siding Removal and Inspection

A second site visit was conducted on May 1, 2003 at which time a section of damaged siding was removed for analysis and testing. Present for the siding removal process was APD Project Manager Richard Chilcoat, HAFE Architect Peter Dessauer and DSC Architect Paul Newman. A total of 32 square feet of siding was carefully removed from the east end of the building. Individual siding members were labeled with numbers (Figure 1) and turned over to HAFE Maintenance Personnel for storage. Four short siding samples were selected; 6A, 7B, 8A and 8B, to be removed from the site and returned to the Architectural Preservation Division Office in Lowell, Massachusetts for analysis. Rather than reinstall the remaining siding removed for inspection it was decided that a temporary plywood covering would be installed by HAFE Maintenance Personnel.

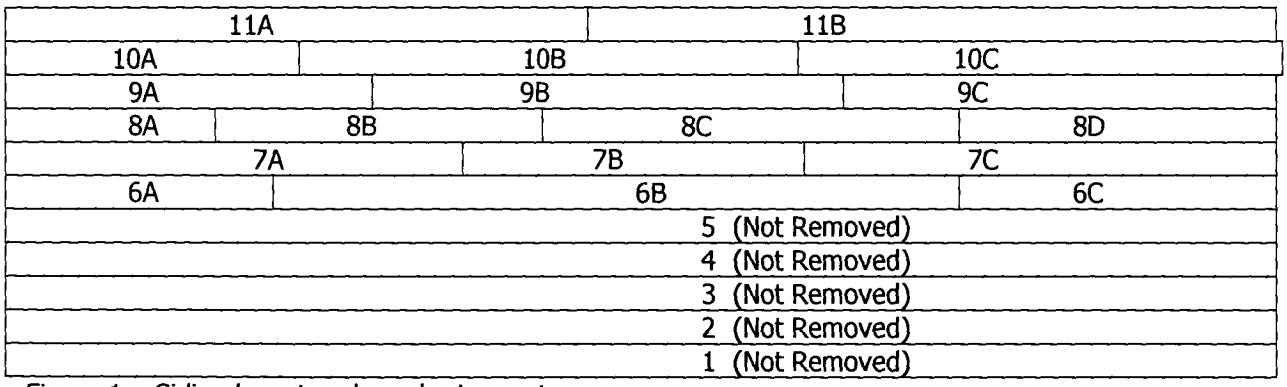


Figure 1. Siding layout and numbering system.

The existing clapboard siding is believed to be original to the 1894 construction. It measures ¾" in butt thickness by 5 ¼" in width and was installed with 4 ½" exposed to the weather. Each clapboard was milled with a 1 ½" back-cut reducing the butt thickness of the top to ½". The material exhibits all of the deterioration normally associated with wood products exposed to the weather for long periods of time. Surface cracks and checks have developed, boards have become cupped and warped and have pulled many of the fasteners loose. In general, the effects of the natural weathering process have been minimal probably due in part to the protection provided by the wide roof overhang.

The extensive abrasive damage to the exposed surfaces is reported to have been caused in 1986 by a project involving sandblasting to remove lead paint. The damage is not limited to the siding but also appears on exterior trim, doors panels, windows, brackets and beaded ceiling boards of the roof overhang. Virtually all exterior exposed wood surfaces were damaged as a result of the high pressure grit blasting. The result is extensive erosion of the summer wood causing a raised grain and rough surface texture (Figure 2).



Figure 2. Damaged Siding, Trim and Door Surfaces at North Elevation

Paint Removal

The first step in the analysis of the sample clapboards was to completely strip the heavy layers of paint that have been applied since the 1986 sand blasting. Clapboard samples 6A, 8A and 8F were chemically stripped using *PEEL-AWAY* 1 a semi paste paint stripper manufactured by Dumond Chemicals Inc., New York, N.Y. (Figure 3). The *PEEL-AWAY* product was chosen because it allowed safe, effective paint removal without further sanding or abrading the wood substrate.



Figure 3. Paint Stripping in Progress.

Repair Options Evaluated

The first option considered for reuse of the historic siding involved reorienting the material on the building or simply turning the clapboards over, exposing the back face and reapplying appropriate finishes. This option may be undesirable due to the fact that each clapboard is milled with an 1 1/2" back-cut to allow the nailing surface to sit flat against the subsheathing. Turning the clapboards over would not only expose this detail but would require a similar detail to be recut on the damaged side for proper reinstallation. A second construction detail makes flipping the existing material over problematic. All but one of the building corners are mitered. Exposing the back of the existing material would require replacing all of the members that intersect corners or approximately 20 percent of the clapboards.

A second repair option utilizing epoxy fillers was tested on sample clapboard 8F. After chemical stripping the sample was allowed to dry and was filled using *Wood Epox,* a wood replacement compound and adhesive filler manufactured by ABATRON, Inc. 33 Center Drive, Gilberts, Illinois 60136 (Figure 4). *Wood Epox* is a no-shrink adhesive paste used to fill, replace and repair wood and other materials in structures walls, floors furniture and sculpture. This product has been used extensively by the NPS for the repair of deteriorated wood elements. Application of the epoxy filler is a slow process because it is a somewhat dry material and creates significant drag as it is applied. ABATRON was consulted regarding this issue and suggested that the bare wood surface be primed with their *PrimKote* primer prior to applying the *Wood Epox* filler.



Figure 4. Sample 8F repaired with epoxy filler. Photo shows unpainted filler, primed filler and filler with two coats finish paint.

The benefit of this option is that it effectively levels the damaged surface and provides an appropriate substrate for application of paint coatings. The test sample was sanded smooth using a 4" vibrating sander with 60 grit sandpaper followed by the application of a alkyd primer and two coats of acrylic finish paint. Sample 8F was left exposed to the weather for several weeks and performed well. Even the unpainted area on the sample appeared to be unaffected by moisture and UV exposure.
The epoxy filler proved effective in leveling the damaged surface of the clapboard and provided an acceptable substrate for the application of paint coatings. Labor costs, materials costs and long term performance of the product would need to be carefully studied before considering this as a repair option for all of the damaged wood elements.

A final treatment option evaluated involved partial leveling of the damaged surface using aluminum oxide woodworking abrasives. Two different types of electric sanding tools were used for the test; a 3" x 21" belt sander and a 6" random orbital sander. After removal of existing paint coatings sample 6A was sanded using 60 grit paper on each type of sander. Belt sanders are most commonly used for fast, effective removal of stock. In this test it effectively leveled the surface in a short period of time but it was very difficult to control the amount of material removed. The orbital sander removed much less material in the same period of time but was significantly easier to control.

Recommendations

The Station's existing clapboards, doors and exterior trim elements should with general carpentry repairs and repainting remain serviceable for many years. Improving the visual characteristics of the damaged material will require full replacement in kind, leveling of the surface through the addition of fillers or abrading the surface further with sanders. The use of epoxy fillers to the extent necessary to level the surfaces of the all of the exterior features is not recommended. This process would be extremely time consuming and costly without any guarantee that the product would perform well over the long term. My research found no examples of the use of epoxy fillers for this type of application, on this large a scale. The use of hand held belt sanders to completely level the surface is also not recommended. Because some of the damaged areas are quite deep this method would require aggressive sanding achieve a level surface thus significantly reducing the overall thickness of the material. This method would also require temporary removal of all of the features to be sanded to a bench or horizontal working surface.

Based on a visual examination of the structure and the limited testing described in this report it is recommended that the exterior wood features on the Station be stripped to remove existing paint coatings. Following general carpentry repairs and epoxy consolidation of deteriorated elements it is recommended that the structure be prepped for repainting by sanding with hand held orbital or vibrating sanders. These types of sander would allow for maximum control of the amount of material being removed in any given area and would also allow the material to be worked on in situ where necessary. The sanding step in this process would be significantly more aggressive than is typically required as prep for repainting but would fall short of providing a completely smooth surface. It is further recommended that a larger scale test, including the application of appropriate historic colors, be conducted in place on a small section of the building to determine if this procedure provides an acceptable surface texture.

End of Report

Subsequent Directive from DSC to HAFE, to conduct an *in-situ* evaluation of the most-favored treatment for siding restoration. February, 2004.

From: Paul_Newman@nps.gov [mailto:Paul_Newman@nps.gov]
Sent: Tuesday, March 02, 2004 3:50 PM
To: Peter_Dessauer@nps.gov; Micheal_Castagnetto@nps.gov
Cc: Patrick_MacDonald@nps.gov; Richard_Chilcoat@nps.gov; mlapointe@gwwoinc.com
Subject: Train Station Siding Test

Richard Chilcoat's recently distributed Siding Treatment Study recommends preparing the siding surface of the train station by aggressive sanding over the other alternatives tested. He further recommends that a larger test be conducted on the train station to determine if the sanding procedure will produce an acceptable surface. We are requesting if the park can conduct the siding preparation and paint test. If so, the following describes the recommended procedure for the test.

Locate a 4' x 4' siding location that represents the average raised grain condition of the siding. First, strip the existing heavy layers of paint. Use "Peel-Away 1" a semi paste stripper manufactured by Dumond Chemicals, NY, which was successfully used in the study because it allows safe, effective removal without further sanding or abrading the wood.

Next sand surface of the wood siding with a hand held random orbital or vibrating type sander with 60 grit paper. The objective is not to get to a completely smooth surface, but to reduce the outstanding grain pattern from the sandblasted wood. Clean and prepare for paint.

Apply wood primer and 2 coats of paint. Use the historic paint color for the siding, Munsell 7/5R 3/6.

Most of the siding on the train station is in relatively good condition, other than the surface appearance from the sandblasting. If the surface can be improved to an acceptable condition, we will be saving a large amount of historic fabric.

End of Directive

At an HAFE site meeting conducted 10 March 2004, the following notes were recorded (Field Minutes issued By GWWO/Architects, 18 March 2004):

Item 19: After the formal meeting broke, PD, ML, PN, Cas and a Park maintenance crew met at the train station to look at siding and trim. The Park had stripped an area of siding using "Piranha" brand stripper, then sanded the area with an orbital sander, then primed and painted the area. The group agreed that this area could be used as an example of what our expectation is for the Contractor. We also noted that the bottom four courses of siding would be removed and salvaged for repairs elsewhere. The bottom four courses would be replaced with rough sawn siding that replicated the existing siding's profile. Flashing would be provided behind the new siding and would extend to grade.

End of Field Evaluation

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Background:

Judi Q. Sullivan, Architectural Conservator, NPS, NERO, Historic Architecture Program, completed a preliminary report on the Paint colors found on the outside painted surfaces at the Harpers Ferry Train Station during 2003 and early 2004. Copies of the document were forwarded on 4 February 2004 to Peter Dessauer at the Harpers Ferry National Historical Park, Harpers Ferry, WV, and to Paul Newman at the Denver Service Center, National Park Service, Denver, CO. This preliminary report is included with this Appendix.

Analysis continued on both the exterior and the interior surfaces of the Train Station, and a final report that covers all surfaces was completed after the 95% Draft of this HSR was submitted and completed. Attempts were made to insert into the body of the text significant findings that were noted in the report. Being 138 pages in length, it was not practicable to include the complete report with this Appendix. The report reference is as follows:

Sullivan, Judith Q. *Harpers Ferry Train Station, Painted Finishes Analysis. Harpers Ferry National Historical Park, Harpers Ferry, WVA.* National Park Service: Northeast Regional Office, June 1, 2004.

Copies of the report are available at the Harpers Ferry National Historical Park, at the Denver Service Center of the National Park Service, and at the Northeast Regional Office that completed the work.

Preliminary Findings
Painted Finishes Study
Harper's Ferry Train Station
Exterior

In December of 2003 I traveled to Harper's Ferry National Historical Park and removed paint samples from the interior and exterior of the B & O Train Station in order to investigate the history of the painted finishes of the building. I removed 160 samples from the exterior and 135 samples from the interior for examination in the laboratory of the National Park Service, Northeast Region's Historic Architecture Program in Lowell, MA.

I have spent the last two months (2 days per week) mounting, labeling and examining the paint samples from the exterior of the building and attempting to determine the timeline of finishes on the building. In particular, I have tried to identify the colors of the building in 1931 - just after the station was moved to its current location. The park has chosen the 1931 date as the restoration date for the building. Although the final painted finishes report is not due until June of 2004 the park has requested that I provide preliminary findings from my investigation in order to aid the restoration teams with critical information about the appearance of the building.

I am confident that I have determined the exterior colors of the building dating to 1931. They are as follows:

Clapboards:	Red Brown (Munsell 7.5R 3/6)
Beaded board ceiling of roof overhang:	Red Brown (Munsell 7.5R 3/6)
Door panels:	Red Brown (Munsell 7.5R 3/6)

Door frames	Dark Brown (Munsell 10R 2/2)
Transoms	Dark Brown (Munsell 10R 2/2)
Door rails and stiles:	Dark Brown (Munsell 10R 2/2)
Window frames	Dark Brown (Munsell 10R 2/2)
Window sills	Dark Brown (Munsell 10R 2/2)
Window sash	Dark Brown (Munsell 10R 2/2)
Roof Structure:	Dark Brown (Munsell 10R 2/2)
Brackets and braces	
Rafters and rafter plates	
Roof rake boards	

The evidence for the above color scheme stands out quite clearly in the overall examination of the sample stratigraphies (layers of paint). The band of red browns and dark browns is found consistently in the same position in the layering of finishes for the overwhelming majority of examined samples.

The red brown/dark brown layers of paint were identified as the 1931 colors by examining features known to date to the 1930-1931 work. Especially helpful was the examination of samples taken from the subway shed at the east end of the building (constructed in 1931) and the window areas on the north (ticket office) and south (men's bathroom) that were altered in 1930. In all of the samples from the ca. 1931 areas, red brown and dark brown were the first finishes applied to the wood. Indeed it appears that at this time, the entire structure was painted red brown with dark brown then painted over selected areas as identified above to provide contrast trim.

The evidence for the 1931 color scheme is clear. However, as with all historic structures some anomalies were found. For example, six window frames do not appear to have any dark brown paint applied to them including the three windows (W-11, W-12, W-13) from the ticket office bay that was altered in 1931. Dark brown paint is likewise not apparent on the window frames of W-1, W-5, and W-15. (In painting the restored building the park will have to decide whether to maintain a consistent color scheme or follow absolute historic accuracy as indicated by this paint study. The architectural conservator is comfortable with either decision.)

Paint history can also indicate the date that certain elements were introduced or altered. Examination of the exterior train station samples pointed to several unexpected findings. The paint history of the windows suggests that when the windows of the men's room (W-1, W-2, W-3) and the windows of the ticket office (W-11, W-12, W-13) were removed and reconfigured into the flat plane of the wall, the original window frames and sash were reused. The paint history also indicates that the frame of W-16 was replaced in 1931, and that several doors (D-2 and D-10) were also replaced in 1931. Doors 4 and 8 appear to be even newer with only the most modern paints in evidence (perhaps dating to c. 1960). Not surprisingly considering the heavy wear they received, door sills and occasionally window sills were replaced at different times in different locations. More details of these variations will be included in the final report. They do not effect the overwhelming evidence for the recommendations included here.

From 1931 to the present the paint history of the building is clear. Determining the earlier finishes is much more difficult. Given the long utilitarian use of the building, the basic fragility of painted surfaces and the intense environmental exposure that the train station was subject to, it is not surprising that evidence of the original finishes is fleeting. The combination of age, dirt and wear – and in particular the intense sandblasting of the building in 1986 – has critically effected the condition of the painted surfaces and made it quite difficult to find extant areas for sampling on the building that maintain every layer of paint applied to the structure.

Despite the uneven quality of some samples due to the condition of the structure, I was able to definitively identify four finishes on the building prior to the 1930-31 alterations and relocation. I have tentatively dated them as follows using the scant documentation available for the painting of the building as presented in Appendix I of the 2003 *Historical Background Report, Baltimore and Ohio Railroad, Harper's Ferry Station* by Andrew S. Lee.

c. 1894 (original construction)

varnish with a *pink brown* finish coat on clapboards, window frames, door frames, transoms, and roof rake.

dark varnish on doors and roof structure (brackets, rafters, and bead board ceiling.

c. 1898 (reference in *Historical Background Report*, 2003, Appendix I)

cream paint on everything except doors which remain varnished

c. 1915 (reference in *Historical Background Report*, 2003, Appendix I)

mint green clapboards, window frames, sash, sills, door frames and sills

gray green doors and roof brackets

dark varnished roof rafters and plates
(bead board ceiling indeterminate)

c. 1923 (reference in *Historical Background Report*, 2003, Appendix I)

dark moss clapboards, window frames, sash, and sills, door frames, door rails and stiles

dark moss roof brackets, plates, rafters, ceiling

sage green door panels

These first four initial finishes are followed by the 1931 treatment which introduces the traditional red and brown colors associated with the B & O railroad. Although the reference to painting the building in 1915 is quoted as being the "standard B & O red and brown" there is no evidence to support this claim. There is no evidence of red or brown paint on the building prior to 1931.

Following the 1931 relocation of the building and the alterations related to that move (including the repainting of the building in the red brown and dark brown color scheme), the paint history of the building's exterior is much easier to discern in the samples. The red brown and dark brown finish was applied at least two more times before the exterior treatment became dominated by applications of tan/taupes, mustard golds, yellow creams and grays. A preliminary list of the post 1931 exterior colors is included below.

Post-1931 exterior paint colors:

c. 1940s	*taupe* all elements (at least 2 finishes)
c. 1950	*mustard gold* (at least two finishes) clapboards, door panels, rafters, bead board ceiling
	glossy black door frames, door stiles and rails, door sills, transom frames
	glossy black roof rakes, roof brackets, rafter plates
c. 1960s	*yellow cream* - all elements (at least 2 finishes)
c. 1960s	*yellow cream* - all elements except door frames
	lt brown – door frames
c. pre-1973s	*Gray* – all elements (thin coat)

c. 1973-1986 *Gray* – all elements (at least two coats)

c. 1986 thick white prime/filler with tan finish coat

The dates for these post-1931 finishes were assigned using just three available date markers and are therefore subject to further investigation and interpretation. The markers used were: 1) the Feb. 3, 1950 removal of the signal tower which reconfigured the east gable end of the roof; 2) the presence of a large square sign on the west elevation of the building protecting an area of clapboards from c. 1973 (date of photo) until its removal in c. 1986, and 3) the known sandblasting and most recent comprehensive paint treatment by the park in 1986.

In the course of this preliminary determination of the exterior finishes of the train station I have examined nearly every sample removed from the building's exterior. The findings are therefore thorough and comprehensive. The final version of the report will provide stratigraphy charts[1] of each exterior element as well as an in-depth discussion of methodology and findings. In addition, each identified finish will be color matched to the Munsell color notation system so that the park has a full record of the painted history of the station for its archives and files.

The analysis of the interior finishes is now underway and if necessary I will provide the park with preliminary findings for the interior as well. It was my understanding that the determination of the exterior restoration (1931) colors was the most critical concern for preliminary results. However, if there is a particular room on the interior that is of a higher priority in the restoration than another please let me know. Otherwise I sense that it will be some time in April before I have reached any informative conclusions concerning the interior rooms.

[1] Charts will list the layers of paint found under microscopic observation and will illustrate how layers line up with known dates of paint documentation.

HARPER'S FERRY TRAIN STATION
EXTERIOR
1931
PAINTED FINISH COLOR MATCH

RED BROWN — **MUNSELL 7.5R 3/6**

Clapboards
Door Panels
Beaded Board Ceiling (of roof overhang)

DARK BROWN — **MUNSELL 10R 2/2**

Door Frames
Door Transoms
Door Rails and Stiles

Window Frames
Window Sills
Window Sash

Roof Brackets and Braces
Roof Rafters and Rafter Plates
Roof Rake Boards

[Recommendations from Final Report, June 2004]

HARPER'S FERRY TRAIN STATION
INTERIOR
1931
PAINTED FINISH COLOR MATCH

ORANGE TAN **MUNSELL 2.5YR 6/8**

Wall Wainscot
Baseboard
Chair rail (where present)
Cornice Molding
Door Trim
Door Rails and Stiles
Door Transoms
Window Trim
Window Sills
Window Sash

CREAM TAN **MUNSELL 7.5YR 8/4**

Upper Wall Zone
Ceiling
Door Panels

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*RUDI J. VAN LEEUWEN, P.E.**
** Connecticut, New York, Pennsylvania and Virginia*
9800 RAMSAY DRIVE
FREDERICKSBURG, VA 22408-9563
TEL (540) 710-0190 (540) 710-0193 FAX
eMAIL ELSRUD@AOL.com

Grieves Worrall Wright & O'Hatnick Inc.
800 Wyman Park Drive - Suite 300
Baltimore, MD 21211

February 14, 2004

Attention: Mr. M. A. Lapointe, A.I.A.
Senior Associate

Re: Rehabilitation of Harper's Ferry Railroad Station
Harper's Ferry, WV

Mark,

I am not in the habit sending originals, but you may be able to enlarge my original prints and incorporate them into your scheme for your presentation on March 10th.
Do whatever you want, but I thought it might save time and money.

I only did prepare sketches for three schemes. Lifting the structure is another alternative; the steel support frame shown on SK-3A and 3B will be almost identical. The cross girders will be 5 feet longer and slightly heavier and the mains will be moved further away from the face of the building by 4 feet for the lifting cables to clear the roof overhang. Mobilization and demobilization of heavy-duty cranes will be a big expense compared to hydraulically lifting the structure with slightly more expensive limited access excavation.

Alternates 1 and 3 are the least expensive ones, but let me know if you want me to rough estimate some of the proposed methods.

I will be back home late Monday and we should talk. I must take off quantities before I can establish a price and I prefer to keep my time to a minimum.

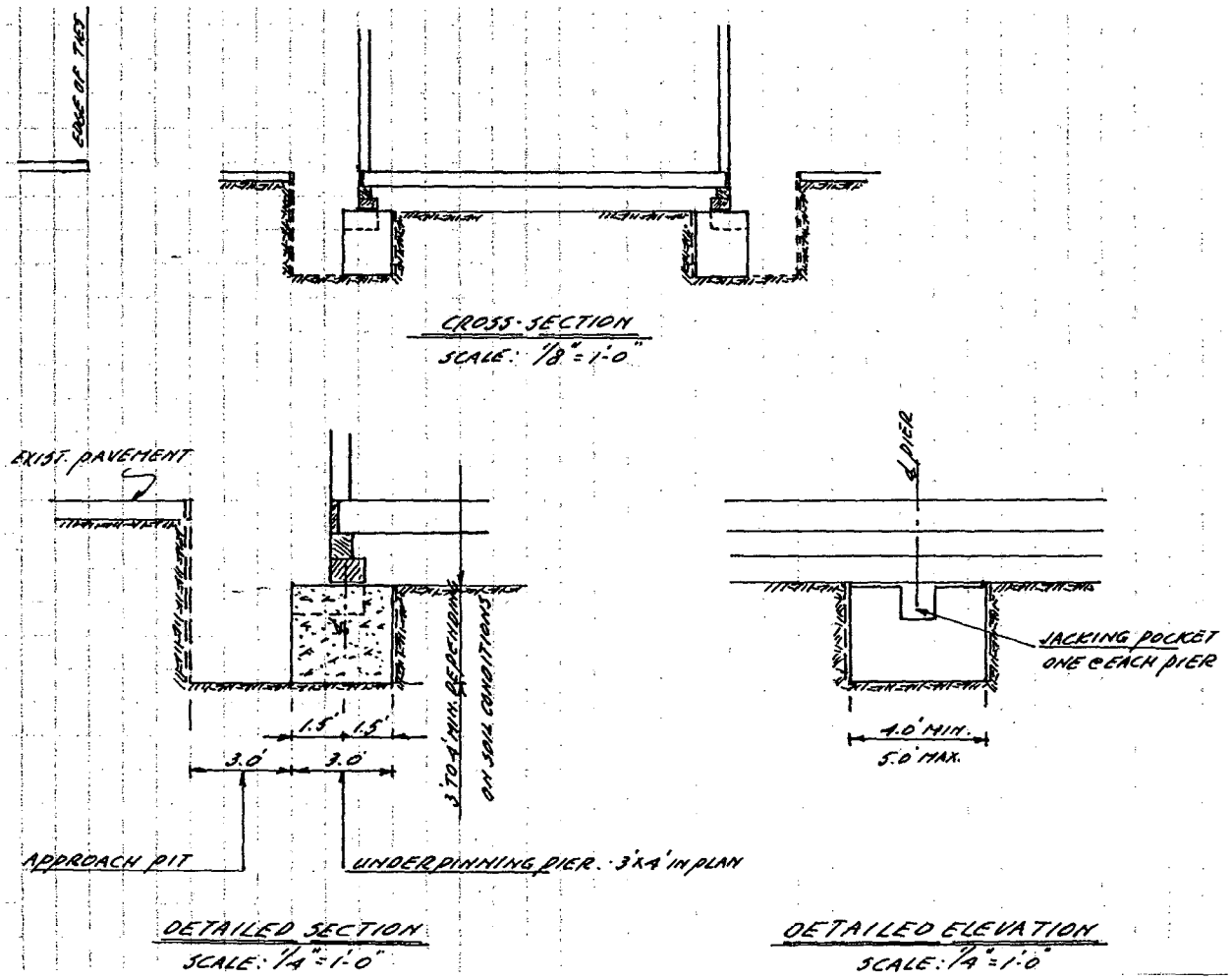
I am sending you the originals by regular surface mail. You should have them not later than this coming Wednesday.

Regards,

Rudi.

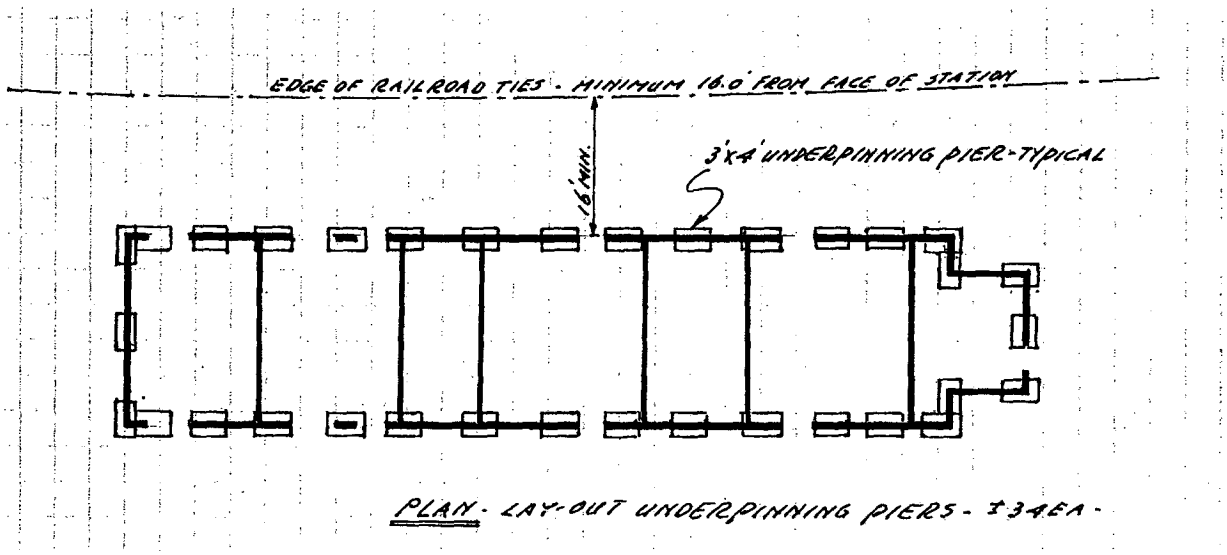
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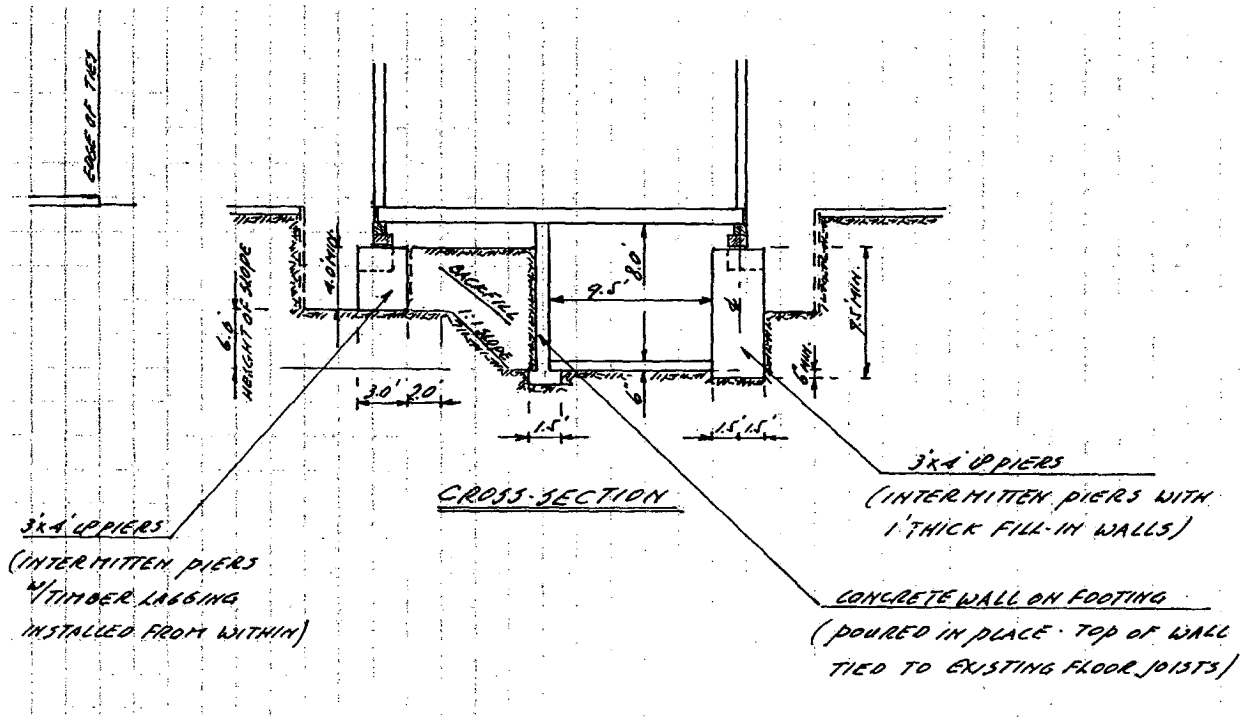
Harpers Ferry Train Station
Intermittent Underpinning (No Basement)
Scale: Not to scale
Date: 02-17-04

SK-1A



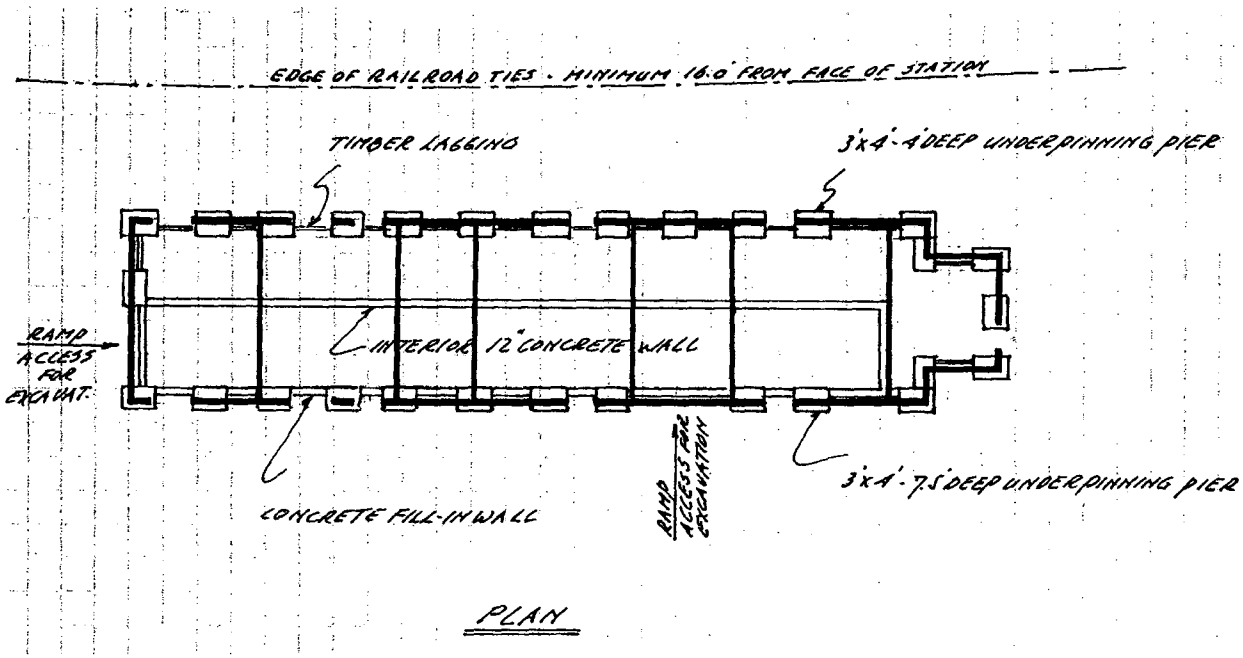
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SK-1B



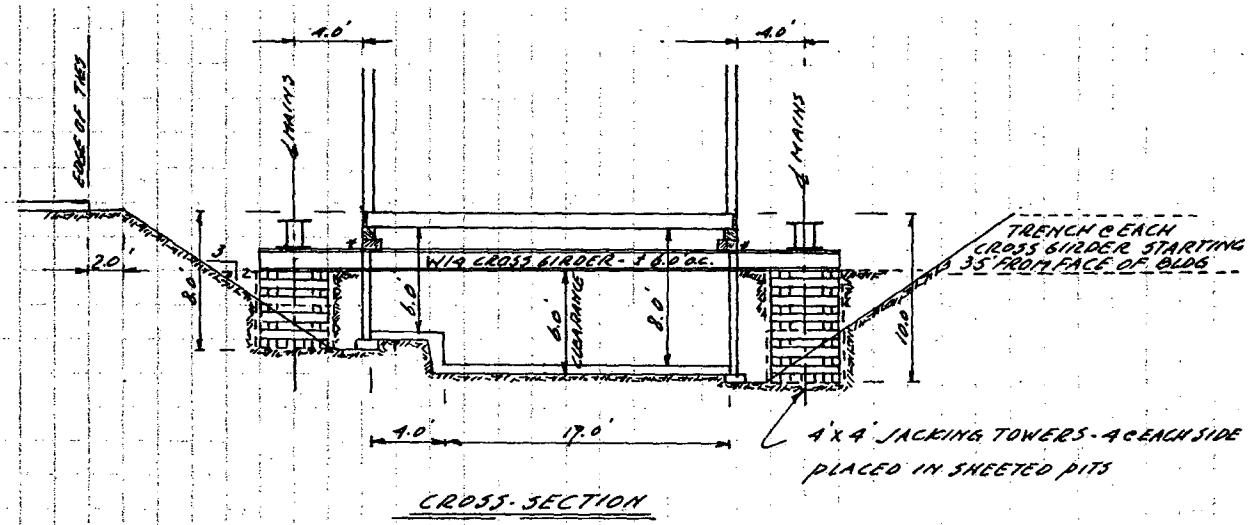
Harpers Ferry Train Station
Intermittent Underpinning (No Basement)
Scale: Not to scale
Date: 02-17-04

SK-2A



Harpers Ferry Train Station
Intermittent Underpinning (No Basement)
Scale: Not to scale
Date: 02-17-04

SK-2B



CROSS-SECTION

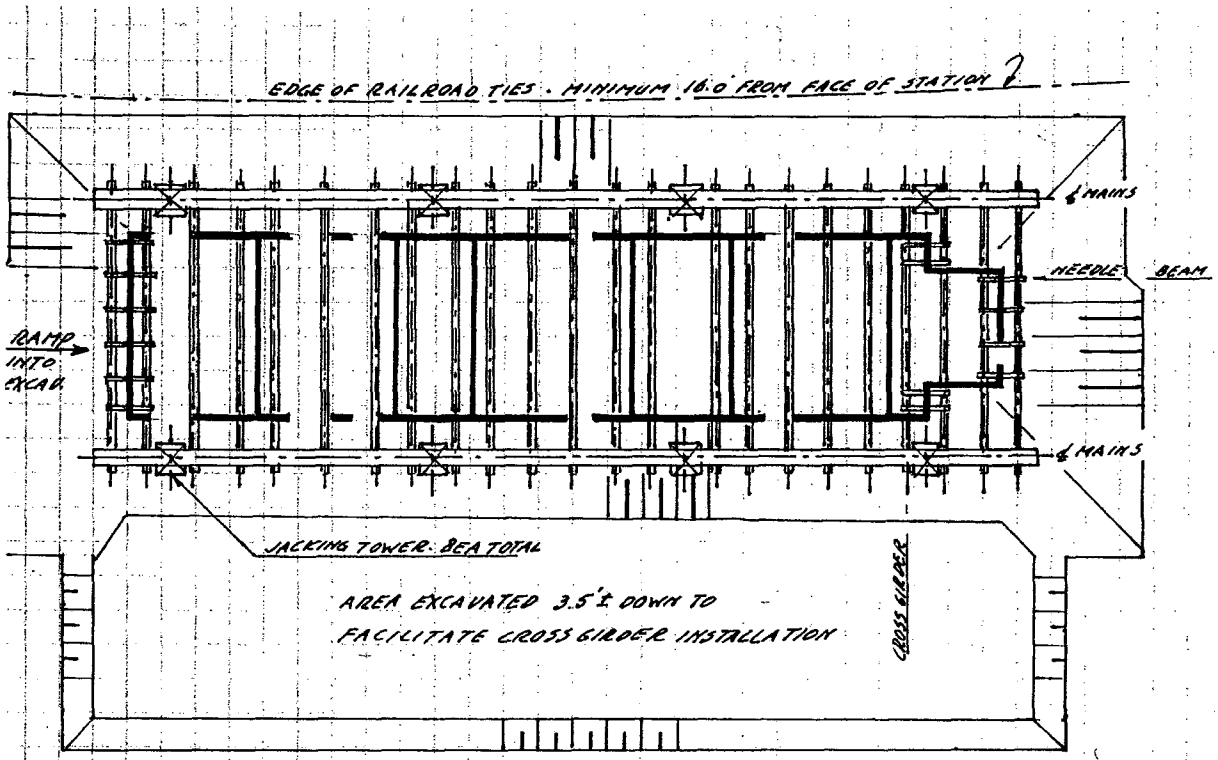
NOTE:

NET CLEARANCE BOTTOM OF CROSS GIRDERS - FUTURE DEEPEST SUBGRADE IS 6.0'±. TO CREATE MORE HEADROOM FOR MECHANICAL EXCAVATION EQUIPMENT, STATION BUILDING CAN BE RAISED 2' TO 4' AT VERY MINOR EXPENSE. ADDITIONAL COST WILL BE LESS ON SAVINGS ON EASIER EXCAVATION UNDER FOOT PRINT OF BUILDING

* TOP OF EXTERIORS ANCHORED TO EXISTING SILL PLATES

Harpers Ferry Train Station
Intermittent Underpinning (No Basement)
Scale: Not to scale
Date: 02-17-04

SK-3A



PLAN - SHORING AND EXCAVATION

SUPPORT SYSTEM CONSISTS OF:
- 2 MAINS (1 OR 2 WF 18 GIRDERS EACH) - 110' LONG
- 23± CROSS GIRDERS (WF 12 OR 14) - 35' LONG
- 141 TIMBER LINTELS - 6"x6" - 4'TO 6' LONG

NOTE:
LOCATION OF CROSS GIRDERS WILL VARY DUE TO EXISTING FIELD CONDITIONS

Harpers Ferry Train Station
Intermittent Underpinning (No Basement)
Scale: Not to scale
Date: 02-17-04

SK-3B

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Published Sources

Annual Report of the President and Directors to the Stockholders of the Baltimore and Ohio Railroad. Baltimore, Maryland, 1836, 1932.

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