

BALTIMORE & OHIO RAILROAD, HARFORD ROAD TUNNEL
(Harford Road Bridge)
Carrying CSX Transportation Railroad under Harford Road
Baltimore City
Maryland

HAER No. MD-203-C

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
Interior Region 1, North Atlantic - Appalachian
1234 Market Street, 20th Floor
Philadelphia, PA 19107

HISTORIC AMERICAN ENGINEERING RECORD
BALTIMORE & OHIO RAILROAD, BALTIMORE BELT LINE, HARFORD ROAD
TUNNEL
(Harford Road Bridge)

HAER No. MD-203-C

Location: Spanning CSX Transportation railroad tracks, north of East 25th St., Baltimore City, Maryland.

The Baltimore & Ohio (B&O) Railroad Harford Road Tunnel is located at latitude: 39.3173169740, longitude: -76.5948611498. The coordinate represents the bridge's northwest corner. This coordinate was obtained on November 30, 2021, by plotting its location using the National Geodetic Survey website's Conversion and Transformation Tool. The coordinate's datum is North American Datum 1983. The B&O Railroad Harford Road Tunnel's location has no restriction on its release to the public.

**Present Owner/
Occupant:** Considered unowned by CSX and the City of Baltimore.

Present Use: Vehicular and pedestrian bridge and railroad tunnel.

Significance: The ca. 1894-95 B&O Railroad Harford Road Tunnel is a representative example of a tunnel constructed as part of the B&O Railroad's Baltimore Belt Line, a railroad segment built between 1890 and 1895 in Baltimore, Maryland. The Belt Line was a major infrastructure improvement that was part of a larger effort by the B&O to provide through service between Washington, DC, and New York City. The Belt Line allowed the B&O to connect its yards in Mount Clare on the west side of Baltimore to Bay View Junction on the east. The B&O Railroad Harford Road Tunnel is also a good example of a late nineteenth-century stone arch tunnel.

Historian(s): Meghan P. White, Laura E. van Opstal, and Nicole A. Diehlmann, Rummel, Klepper, & Kahl (RK&K), LLP, 2022.

**Project
Information:** The B&O Railroad Harford Road Tunnel was recorded between November 2021 and March 2022 by RK&K, LLP, Baltimore, Maryland, for CSX Transportation (CSX). The recordation was undertaken pursuant to a stipulation of the *Memorandum of Agreement Among the Federal Railroad Administration, the Maryland State Historic Preservation Officer, the Pennsylvania State Historic Preservation Officer, the Maryland Department of Transportation Port Administration, and CSX Transportation Regarding the Howard Street Tunnel Project Baltimore*

City, Maryland and Delaware County, Pennsylvania. Project personnel included RK&K historians Meghan P. White, Laura E. van Opstal, and Nicole A. Diehlmann and photographer Jet Lowe. The sponsor for the recordation is CSX. Cooperating agencies include the Federal Railroad Administration; the Maryland State Historic Preservation Officer; and the Maryland Department of Transportation (MDOT) Maryland Port Administration (MPA).

Part I. Historical Information

A. Physical History:

- 1. Date(s) of construction:** Ca. 1894-95, as indicated on a plan sheet titled “B&O RR Plan, Sections, &c. Harford Road Bridge,” from 1905 and annotated in 1911 and 1934.
- 2. Architect/Engineer:** No architect or engineer has been definitely associated with construction of the tunnel; however, the construction plan for the B&O Railroad Guilford Avenue Tunnel lists W. T. Manning, Chief Engineer, and J. B. Bolt, P.A. Engineer, who may also be responsible for the design for the B&O Railroad Harford Road Tunnel. Manning became assistant chief engineer of the B&O Railroad in 1892 and chief engineer in 1894. He oversaw construction of the Belt Line before retiring from the B&O in 1899. No bibliographic information was found for J. B. Bolt.
- 3. Builder/Contractor/Supplier:** The B&O Railroad.
- 4. Original plans and construction:** The original construction plans have not been located; however, a 1905 plan, which was annotated in 1933 and 1934, and an associated repair and maintenance record show the tunnel’s original construction (Figures 1a and 1b). The tunnel was designed and constructed as an arched single-span, rusticated limestone and red brick structure with openings oriented northwest-southeast. The superstructure, approximately 26' in length, carried Harford Road over the railroad tracks. The substructure, set within a northwest-southeast-oriented cut below street level, consisted of a short tunnel that carried double railroad tracks under Harford Road. The superstructure sloped downward to the north at a 4.88 percent grade. Physical inspection of the structure reveals that the original appearance of the tunnel included east and west portal façades consisting of a rusticated limestone arch lined with evenly shaped voussoirs; the remainder of the façade consisted of rectangular coursed rusticated limestone. The original interior of the arched barrel was brick resting on a rectangular coursed rusticated limestone base. Stepped rusticated limestone abutments projected at perpendicular angles to the roadway and were topped with a series of larger capstones.
- 5. Alterations and additions:** According to the annotated 1905 plan, in 1900, the B&O straightened the north side wall, which had started to squeeze in, and placed an inverted arch under the tracks.

The B&O repointed and repaired the portal and walls in 1906, according to the annotated 1905 plan.

According to the annotated 1905 plan, a sidewalk slab, 5'-0" thick and 9'-8" wide, on 20'-0" I-beams encased in concrete was added to the east side of the superstructure in 1912; however, an inscribed date on the cantilevered sidewalk slab, visible above the east portal reads "1914". The B&O applied poured concrete over portions of the original stepped capstones on the abutments to support the new decking. The annotated 1905 plan shows a 4'-0" steel picket fence atop the superstructure.

In 1931, brick was removed and gunite applied to the arch, according to the repair and maintenance record included with the annotated 1905 plan.

Between 1958, when the B&O eliminated passenger service between Baltimore and New York City, and 1960, the rail line was reduced from double tracks to a single track.¹

In 1964, the portals, arch, and walls were repointed, and grout was pumped behind an unspecified tunnel wall.

In 1984, CSX raised train height restrictions along the Belt Line to provide a higher, 19'-3" clearance to accommodate multi-level automobile carriers. At Harford Road, the tracks were lowered for the clearance project by creating a vertical curve, or sag, under the tunnel to gain the necessary clearance. Concrete underpinning was added along the tunnel foundation so that the sidewalls of the arch did not collapse. As part of this project, CSX replaced original parapets with concrete parapet walls and chain-link fencing, and guardrails were added to portions of the west side of the superstructure.²

As of 2022, the tunnel was proposed for demolition and replacement as part of the Howard Street Tunnel Project to allow double stacking of freight trains along CSX's route between Baltimore and Philadelphia. Demolition is expected later in the year.

B. Historical Context: The ca. 1894-95 B&O Railroad Harford Road Tunnel was constructed as part of the B&O Railroad's Baltimore Belt Line, a railroad segment built between 1890 and 1895 in Baltimore, Maryland. The Belt Line was a major infrastructure improvement that was part of a larger effort by the B&O to provide through service between Washington, DC, and New York City. The historical context for the Baltimore Belt Line can be found in the Historical Report for HAER No. MD-203. The Belt Line was the most complicated part of the overall objective to providing service between Washington, DC, and New York. All other segments of the overall B&O project lacked the significant obstacles posed by the

¹ Herbert H. Harwood Jr., *Royal Blue Line* (Baltimore and London: Johns Hopkins University Press, 1990; repr. 2002), 170-71.

² "Belt Line Clearance Project." *The Sentinel* 6, no. 5 (September-October 1984): 7.

construction of the tunnel and the route through Baltimore City. As it compares to projects by competitors, it is unique because the primary competitor of the B&O was the Pennsylvania Railroad, which grew by acquisitions rather than new capital construction. The Pennsylvania Railroad acquired existing lines and associated infrastructure while the B&O undertook this massive-scale construction project.

History of the Harford Road Tunnel Area

The B&O Railroad Harford Road Tunnel is within an area annexed to the City of Baltimore in 1888. According to the eighteenth-century *Conveyancer's Map* of Baltimore, the land was once part of Darley Hall, a tobacco plantation patented in the late seventeenth century by John Oldton. North of the tunnel is the Friends Burial Ground, a cemetery established in 1713 on land within the Darley Hall plantation that continues to be used by the Religious Society of Friends. Harford Road likely started out as “Darley Path” and later in the colonial period became a turnpike that connected the city with Baltimore and Harford Counties.³ The tunnel is adjacent to Clifton Park, which was once owned by Johns Hopkins and contains his former residence, Clifton Mansion. Upon Hopkins’s death in 1873, the land was granted to the trustees of Johns Hopkins University, who sold the property to the City of Baltimore in 1894 for a municipal park. Ca. 1921, the city’s Board of Park Commissioners transferred a parcel of land at the southwest corner of the park to the city’s Board of Education, which constructed Clifton Park Junior High School #90 on the site in 1923.⁴

Between 1857 and 1876, a number of residences and commercial establishments were constructed along Harford Road to the south and west of Hopkins’s estate. The Halls Springs Passenger Railway, a horsecar line that ran from Baltimore up Harford Road over the Belt Line tracks to the Halls Spring Hotel at Herring Run, was founded in 1870. The line was purchased in 1885 by the City Passenger Railway Company and was electrified in the 1890s and connected to Baltimore’s other streetcar lines. The streetcar spurred residential development along Harford Road, including large developments such as Darley Park and Upper and Lower Coldstream-Homestead-Montebello, which featured daylight row houses—row houses in which almost every room had at least one window. The 1896 *G. W. Bromley Atlas of the City of Baltimore* shows that Clifton Park, including Lake Clifton, was extant, but East 25th Street, which now runs just south of the Belt Line, had not yet been extended east of Greenmount Avenue (Figure 2). By 1928, all the surrounding residential neighborhoods had been built out.⁵

There were early concerns over the construction of the B&O Railroad Harford Road Tunnel. One anonymous property owner believed that “the manner in which the Belt Line proposes to cross the Harford road [sic] will prove dangerous to life, and cause a lasting depreciation of

³ Matt Bray, Nicole A. Diehlmann, Laura van Opstal, and Meghan P. White, “Howard Street Tunnel Project Architectural Historic Properties Identification and Effects Assessment Technical Report” (Baltimore, MD: RK&K, 2021), 32.

⁴ Bray et al., “Howard Street Tunnel Project,” 32.

⁵ Ibid.

property.”⁶ Open cuts in general worried the citizens of Baltimore, who wished the B&O to enact “every safeguard” to protect residents from being “mutilated and disfigured.”⁷ However, the planned rail route crossing under Harford Road proceeded, and the tunnel opened in 1895.

Part II. Structural/Design Information

A. General Statement:

- 1. Character:** The B&O Railroad Harford Road Tunnel is a good example of an arched single-span rusticated limestone and red brick structure built as part of the Belt Line. Its siting and design display the B&O’s grade-separated approach to weaving the new line through north Baltimore in the 1890s. Like all original Belt Line tunnels, the Harford Road Tunnel features elements of a unified design strategy, including portals and retaining walls along open cuts constructed with rectangular coursed rusticated limestone. The tunnel barrels, like most others along the Belt Line, feature brick construction.⁸
- 2. Condition of fabric:** The B&O Railroad Harford Road Tunnel is in fair condition. The original structural brick tunnel barrels are covered with spalling gunite, and sections of brick are missing.

B. Description: The B&O Railroad Harford Road Tunnel carries Harford Road (MD 147) over the CSX Transportation railroad tracks in northeast Baltimore north of East 25th Street. The tunnel is an arched, single-span, rusticated limestone, and red brick structure. The approximately 26'-long superstructure is at street level, oriented northeast-southwest, while the substructure, with a 70'-4" tunnel for the railroad tracks, is set within a deep northwest-southeast cut below street level.

The east and west façades consist of rectangular coursed limestone with an arch lined with evenly shaped limestone voussoirs. The interior of the arched barrel is brick covered with spalling gunite. Running along the foundation of the tunnel’s interior are square concrete underpinnings. Applied utility piping runs horizontally across the south side of the interior. Stepped rusticated limestone abutments project at perpendicular angles to the roadway and are topped with a series of larger capstones.⁹ Metal L-shaped vertical supports, screwed into the tops of the limestone steps of the southwest abutment, are connected with wire cables to form a makeshift railing. A concrete retaining wall extends northeast from the southeast abutment. Projecting from the east façade is concrete decking supporting a widened Harford

⁶ “Belt Line Questions,” *The Sun* (Baltimore, MD), April 14, 1890, 4.

⁷ “The Citizens and the Belt Line,” *The Sun* (Baltimore, MD), April 25, 1890, 5.

⁸ Lawrence Lee, “Baltimore’s Unseen Artery: A Brief History of the Baltimore Belt Railroad and its Howard Street Tunnel,” in *Baltimore Civil Engineering History*, ed. Bernard G. Dennis Jr. and Matthew C. Fenton IV, P.E. (Reston, VA: American Society of Civil Engineers, 2004), 163-91.

⁹ Alice Crampton and Julie Abell, “Harford Road Bridge (BC8026),” Maryland Inventory of Historic Properties Form B-4523 (Crownsville, MD: Maryland Historical Trust, 1994), 51.

Road; the date “1914” is inscribed in the concrete. Poured concrete was added above several of the rusticated limestone capstones to serve as a foundation for the new decking. The single railroad track running through the tunnel has metal rails and wood ties with metal tie plates set on gravel ballast. The paved asphalt roadway of the superstructure accommodates six traffic lanes in a combination of through, turn, and parking lanes. The road is lined by concrete sidewalks with concrete railings and chain-link fencing. Portions of the west side of the road are lined with metal guardrails.

C. Mechanicals/Operation: Not applicable.

D. Site Information: The tunnel is situated within a predominantly commercial area with a residential row house neighborhood to the north. It is bordered by the former Clifton Park Junior High School #90 to the northeast, Clough Alley and a parking lot to the southeast, a gas station to the southwest, and a tire shop to the northwest. The superstructure is at street level, while the substructure carries railroad tracks through a tunnel set within a deep open cut below street level.

Part III. Sources of Information

A. Secondary Sources:

Bray, Matt, Nicole A. Diehlmann, Laura van Opstal, and Meghan P. White. “Howard Street Tunnel Project Architectural Historic Properties Identification and Effects Assessment Technical Report.” Baltimore, MD: RK&K, 2021.

Baltimore and Ohio Railroad Historical Society. “Belt Line Clearance Project.” *The Sentinel* 6, no. 5 (September-October 1984): 7. Baltimore & Ohio Railroad Museum Collection, Baltimore, Maryland.

Crampton, Alice, and Julie Abell. “Harford Road Bridge (BC8026).” Maryland Inventory of Historic Properties Form B-4523. Crownsville, MD: Maryland Historical Trust. 1994.

Federal Railroad Administration. “Baltimore’s Railroad Network: Analysis and Recommendations.” 2011. Accessed October 11, 2021.
<http://www.insystem.com/usgs/mdothst.pdf>.

Harwood, Herbert H., Jr. 1990, 2002. *Royal Blue Line*. Baltimore and London: Johns Hopkins University Press, 1990. Reprinted 2002.

Lee, Lawrence J. “Baltimore’s Unseen Artery: A Brief History of the Baltimore Belt Railroad and its Howard Street Tunnel.” In *Baltimore Civil Engineering History*, edited by Bernard G. Dennis Jr. and Matthew C. Fenton IV, P. E., 163-91. Reston, VA: American Society of Civil Engineers, 2004. doi:10.1061/40759(152)11.

White, Meghan P., and Nicole A. Diehlmann. "Baltimore & Ohio Railroad, Baltimore Belt Line." HAER No. MD-203. Historic American Engineering Record (HAER), National Park Service, U.S. Department of the Interior, 2022.

B. Likely Sources Not Yet Investigated: Interstate Commerce Commission (ICC) valuation records may exist for this structure. These records are held by the National Archives and Records Administration.

Part IV. Figures

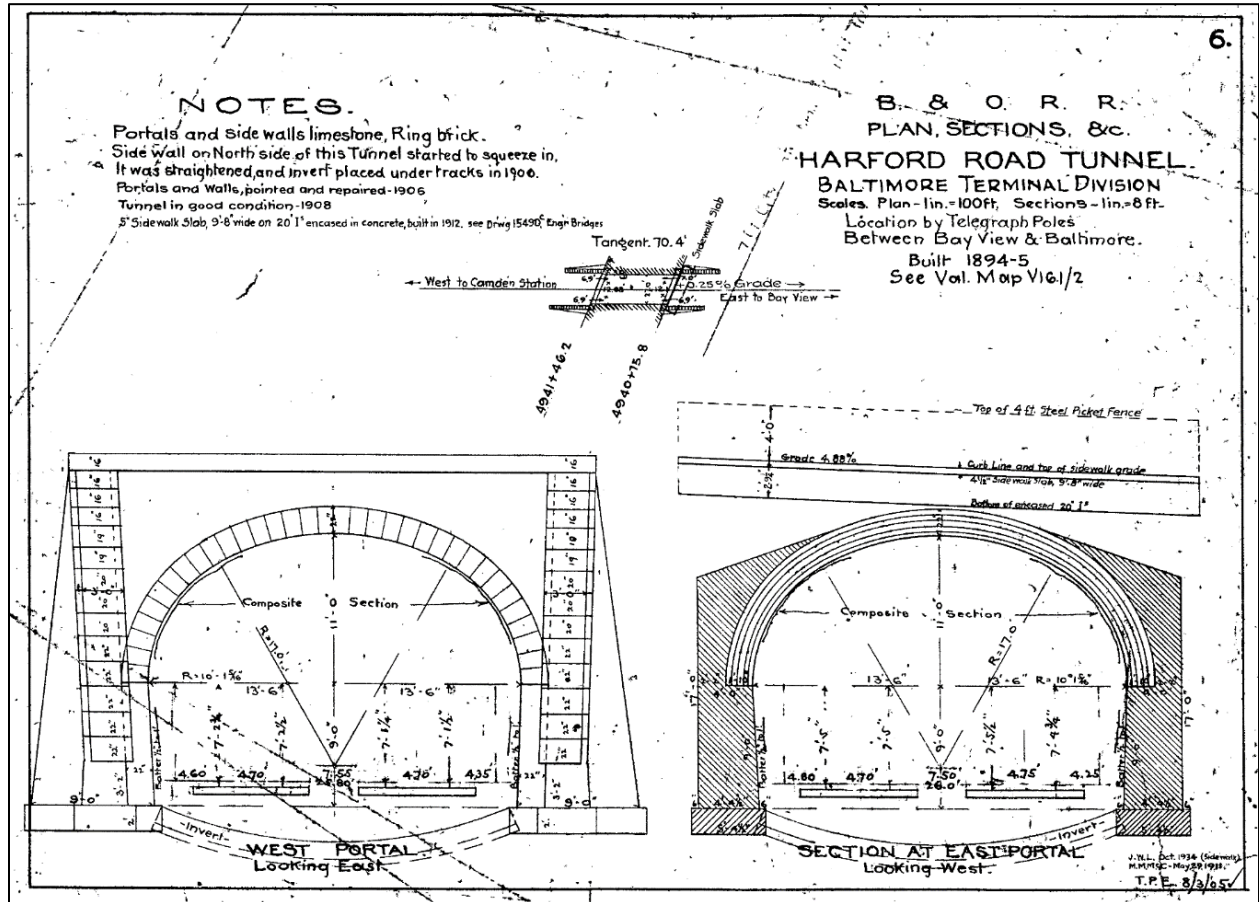


Figure 1a. Section drawings from "B&O RR Plan, Sections, &c. Harford Road Tunnel," 1905 (annotated in 1911 and 1934). (Drawing courtesy of CSX Transportation.)

DIVISION - BALTO. E. E.		CHARACTER - STONE SIDEWALLS AND
NAME - HARFORD RD.		PORTALS, BRICK ARCH
LOCATION - BALTIMORE, MD.		
<u>REPAIRS</u>		
<u>WORK COMP.</u>	<u>FO REMAN</u>	<u>WORK DONE</u>
June, 1931	: Healy:	Brick removed and arch gunited.
11-1964-11-9964	RR Riddle	Pointed 4,064 SF. Portal. " 1,455 SF. Arch. " 1,276 SF. Wall. Pumped 14 C.Y. Grout Behind Wall.

Figure 1b. B&O Railroad Harford Road Tunnel Repair and Maintenance Record, 1931 (annotated in 1964). (Image courtesy of CSX Transportation.)



Figure 2: Location of the new B&O Railroad Harford Road Tunnel, 1896. (Image from *Bromley Atlas of the City of Baltimore, Maryland.*)

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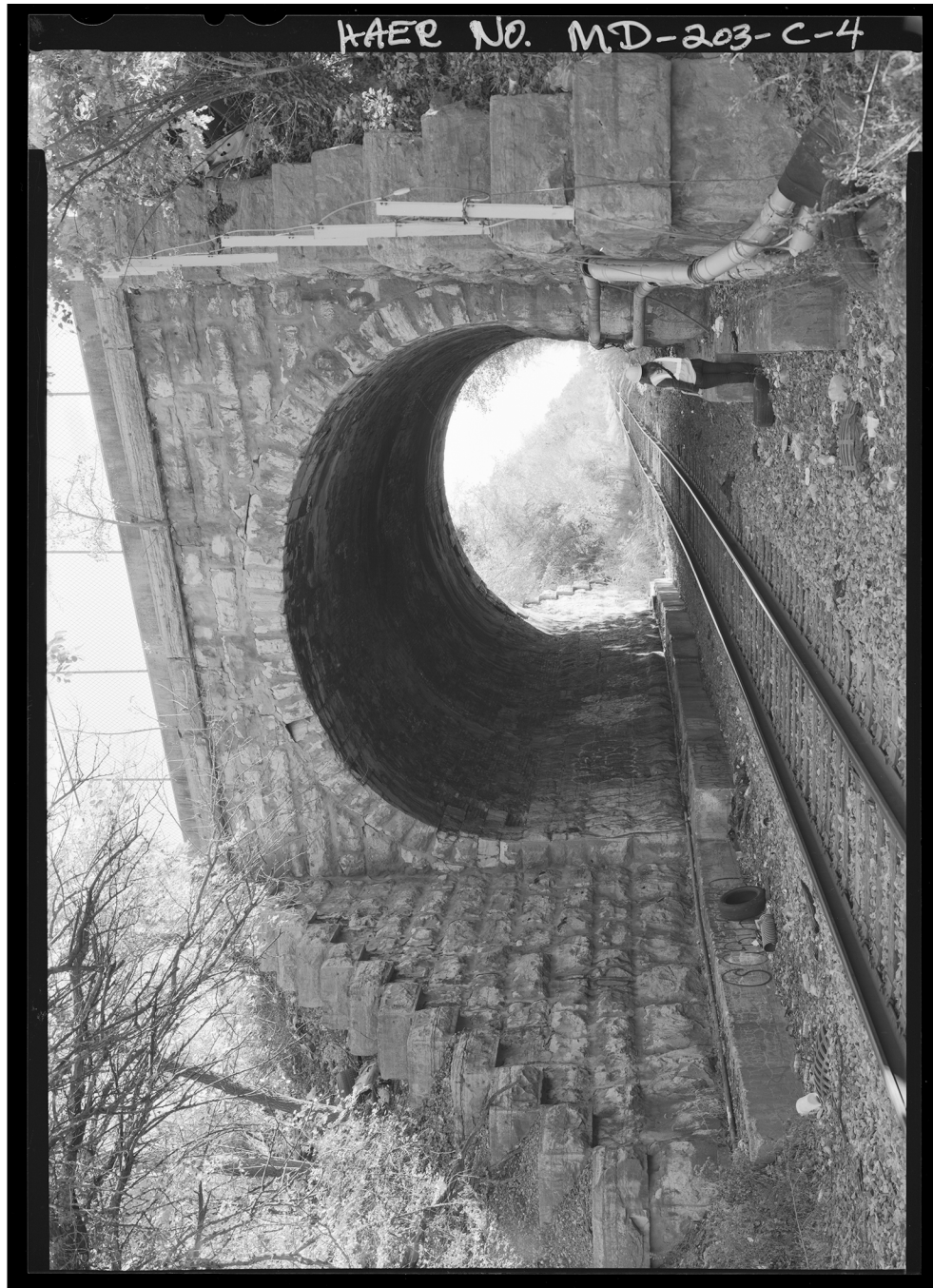
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Jet Lowe, photographer, November 2021

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| MD-203-C-3 | West tunnel portal, view looking east. |
| MD-203-C-4 | Detail view of west tunnel portal and stepped limestone abutments. |
| MD-203-C-5 | Street view of the bridge deck and roadway, looking north along Harford Road. Note the chain-link fences atop the concrete parapet walls. |
| MD-203-C-6 | Street view looking southwest along Harford Road. The chain-link fence, concrete walls, and metal guardrails indicate the location of the tunnel portal walls beneath. The commercial setting of the Harford Road Tunnel is visible in the distance. |
| MD-203-C-7 | View from atop the Harford Road Tunnel, looking east along the railroad right-of-way through the chain-link fence above the east tunnel portal wall. |
| MD-203-C-8 | View looking west along the rail right-of-way through the chain-link fence above the west portal wall as an eastbound freight train approaches the tunnel. |

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USGS The National Map: Orthoimagery

