

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form*. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: Blue Ridge Tunnel
Other names/site number: Crozet Tunnel; Rockfish Tunnel; DHR #062-5105, 002-5075-0564
Name of related multiple property listing:
Greenwood-Afton Rural Historic District
(Enter "N/A" if property is not part of a multiple property listing)

2. Location

Street & number: 215 Afton Depot Lane
City or town: Afton State: VA County: Nelson and Augusta
Not For Publication: N/A Vicinity: X

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,
I hereby certify that this X nomination request for determination of eligibility meets
the documentation standards for registering properties in the National Register of Historic
Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property X meets does not meet the National Register Criteria. I
recommend that this property be considered significant at the following
level(s) of significance:

 national X statewide local
Applicable National Register Criteria:
 X A X B X C D

Julie D. Langston 09/10/23
Signature of certifying official/Title: Date
Virginia Department of Historic Resources
State or Federal agency/bureau or Tribal Government

In my opinion, the property meets does not meet the National Register
criteria.

Signature of commenting official: Date

Title: State or Federal agency/bureau
or Tribal Government

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4. National Park Service Certification

I hereby certify that this property is:

- entered in the National Register
- determined eligible for the National Register
- determined not eligible for the National Register
- removed from the National Register
- other (explain:) _____

Signature of the Keeper

Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply.)

- Private:
- Public – Local
- Public – State
- Public – Federal

Category of Property

(Check only **one** box.)

- Building(s)
- District
- Site
- Structure
- Object

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Number of Resources within Property

(Do not include previously listed resources in the count)

Contributing	Noncontributing	
<u>0</u>	<u>0</u>	buildings
<u>0</u>	<u>0</u>	sites
<u>0</u>	<u>0</u>	structures
<u>0</u>	<u>0</u>	objects
<u>0</u>	<u>0</u>	Total

Number of contributing resources previously listed in the National Register 1
The Blue Ridge Tunnel is a contributing resource in the Greenwood-Afton Rural Historic District, Albemarle, Nelson and Augusta counties.

6. Function or Use

Historic Functions

(Enter categories from instructions.)

TRANSPORTATION/rail-related

Current Functions

(Enter categories from instructions.)

RECREATION AND CULTURE/outdoor recreation

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7. Description

Architectural Classification

(Enter categories from instructions.)

OTHER: Railroad Tunnel

Materials: (enter categories from instructions.)

Principal exterior materials of the property: STONE: Greenstone; BRICK

Narrative Description

(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with a **summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph

The Blue Ridge Tunnel is a single-track railroad tunnel constructed between 1850 and 1859; it was opened for use in 1858. It is located 500 ft. below the Rockfish Gap and straddles the county line between Nelson and Augusta Counties. The gap was historically and remains a well-used area to cross the Blue Ridge Mountains between the Piedmont and Shenandoah Valley. This area is the junction of Interstate 64, U.S. Route 250, the Skyline Drive, the Blue Ridge Parkway, and the Appalachian Trail. The tunnel was constructed and designed by engineer, Claudius Crozet. It was carved from greenstone and has an ellipse-shaped bore measuring 16 x 21 ft. It is 4,279 ft. in length with a downward eastern slope of 69.2 ft. The eastern portal and much of the interior is exposed rock. The western portal is dressed with limestone, and from the west, the interior is lined approximately 1,460 ft. with brick. Ventilation shafts were not used due to its depth below the surface of the gap. It was dug with hand tools, blasted with black gunpowder, and a labor force of primarily Irish immigrant labor supplemented for a short time with hired-out enslaved African American. In 1944, the Blue Ridge Tunnel was replaced with a larger tunnel that runs parallel to the original. Today, it is the centerpiece of a 2.25 mi. recreational hiking and biking trail. The tunnel is located approximately 24 miles west of Charlottesville, approximately 12 miles north of the Nellysford community in Nelson County, and approximately three miles east of the City of Waynesboro. In 1859, the Tunnel was the longest in the United States until it was surpassed in

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length in 1875. It remains the longest tunnel that was hand-dug using black powder blasting, and dug without the use of ventilation shafts. ¹

Narrative Description

Setting Description

The Blue Ridge Tunnel, also known as the Crozet or Afton Tunnel (VDHR #062-5105, VDHR #002-5075-0564), is located 500 ft. below the Rockfish Gap. The tunnel spans the county line between Nelson and Augusta Counties. Above the tunnel is the junction of Interstate 64, U.S. Route 250, the Skyline Drive, the Blue Ridge Parkway, and the Appalachian Trail. The eastern portal overlooks the Rockfish Valley including the village of Nellysford which is about 12 miles south of the tunnel. The eastern trailhead is located in the community of Afton. The western portal overlooks the Shenandoah Valley and the City of Waynesboro which is about three miles west of the tunnel. The western trailhead is accessed off of U. S. Route 250. The tunnel is part of the Greenwood-Afton Historic District.

The Blue Ridge Tunnel (BRT, VDHR# 062-5105 and 002-5075-5064) was one of four single-track tunnels and the longest of the four that were constructed as part of the Blue Ridge Railroad (BRR). This railroad was the first to connect the Piedmont and Shenandoah Valley by rail. The tunnel is located 500 ft. below the Rockfish Gap which was one of the lowest areas along the Blue Ridge Mountains. This area was a historic crossing and remains a junction for Interstate 64, U.S. Route 250, the Skyline Drive, the Blue Ridge Parkway, and the Appalachian Trail.

Construction of the tunnel took place between 1850 and 1859.² The rail bed and lines were laid and the tunnel opened for regular use in 1858. The tunnel was constructed from greenstone, an excessively hard metamorphic rock. The rock was so hard that most of the interior of the tunnel remains unlined. The tunnel bore measures 16 x 21 ft. and is elliptical-shaped because it would, according to Crozet, prevent excessive blasting and cave-ins. It is 4,279 ft. in length with a 69.2 ft. downward eastern slope. Ventilation shafts were not created due to the depth of the tunnel below the gap. The tunnel was regularly used between 1858 until 1944. The replacement tunnel remains in use and is located at a lower elevation and is approximately 180 ft. to the south of the eastern portal and the tunnel runs parallel to the original tunnel. The replacement tunnel is lined with cement, and the portals are faced with cement. It has a roundhead arch, measures 18 x 22 ft., and is 4,230 ft. in length. It is a single-track tunnel that was dug using modern materials, equipment, and dynamite. ³

¹ The length of the tunnel used in this nomination is the length that is stated by the Nelson County website, <https://www.nelsoncounty.com/blue-ridge-tunnel/info-map/>; and Dr. Gary K. Rogers, Phone Interview Regarding the Construction and Restoration of the Blue Ridge Tunnel, interview by Sandra Esposito, July 8, 2021.

² Payroll records show that Irish laborers were clearing away rocky protrusions in the tunnel and shoring up the east portal embankment just a few days before the first train went through in April 1858. More work in the tunnel continued through 1859 as Irish laborers on scaffolding repaired brick arches when the passage was clear of trains. Two of the men were killed in an explosion in the tunnel that year

³ "Overview and FAQs," Claudius Crozet Blue Ridge Tunnel Foundation, accessed August 3, 2021, <https://www.blueridgetunnel.org/overview-faqs/>; Dr. Gary K. Rogers, Phone Interview; Col. William Couper,

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Today, the Blue Ridge Tunnel is the feature of the 2.25 mi. Nelson and Augusta County recreational trail that opened in 2020. The eastern trailhead is in Nelson County and the western trailhead is in Augusta County. The eastern trailhead is located in the community of Afton and is accessed off State Route 6 and 151. The parking area is near the location where the c. 1920 Afton depot once stood. The eastern trail is .63 mi. and follows the original railbed to the eastern portal of the tunnel. The northern side of the trail is forested and the southern side has live railroad tracks. The eastern portal overlooks the Rockfish Valley. The eastern portal of the tunnel has an unfinished rock façade. There is a dry-laid stone retaining wall above the portal to prevent water runoff over the portal. On the interior of the eastern end there is a section of several hundred feet of brick lining laid in common bond of varied courses along the sides and running bond at the crown or top of the tunnel. Crozet never mentioned the need for this section of lining and it may have been a prototype for the arching of the western end, used to check for clearances, or there may have been some kind of rock failure. Most of the interior is exposed rock. Tool marks and drill holes can be seen along the interior walls. There is a spring and the interior remains unlit.⁴

The western portal is accessed by the trailhead off U.S. Route 250 in Augusta County. It has a gravel trail running .81 mi. through a wooded and rambling path. The western portal is finished with dressed limestone. The portal has a lancet arch with quoins. The portal facing is toothed into the brick lining of the interior of the tunnel. The design of the portal was described in Crozet's 1849 specifications. He stated the portals were "to be faced with sandstone, the arch ending into stone quoins two feet deep on the face, which tooth into the brick or stonework of the interior alternately 2 ½ and 3 ½ ft." Crozet used limestone instead of sandstone because it was cheaper and locally obtained. The BRT is only tunnel of the four along the BRR that had a limestone portal. The Greenwood and Brooksville Tunnels were finished with brick portals.⁵

Claudius Crozet, Soldier--Scholar--Educator--Engineer (1789-1864) (Charlottesville, VA: The Historical Pub. Co., Inc, 1936), 127, 168; Robert F Hunter and Edwin L Dooley, *Claudius Crozet : French Engineer in America 1790-1864* (Charlottesville, VA: University Press Of Virginia, 1989), 140; William D Middleton, *Landmarks on the Iron Road* (IN: Indiana University Press, 1999), pdfmedia.net; 111; Mary E Lyons, ed., *Claudius Crozet and the Blue Ridge Railroad: Selected Letters*, 2017, <http://books.apple.com/us/author/mary-e-lyons/id358497840>, 420-424; and William Lowell Putnam, *Great Railroad Tunnels of North America* (Jefferson, N.C.: McFarland, 2011), Kindle book, 2334.

⁴ "Trail Info & Map," VISIT NELSON COUNTY, accessed August 4, 2021, <https://www.nelsoncounty.com/blue-ridge-tunnel/info-map/>; and Gary K. Rogers, PE, PhD, "Phase 2: The Light at the End of the Tunnel," in (Claudius Crozet Blue Ridge Tunnel Foundation, 2020).

⁵The tunnels of the Blue Ridge Railroad include the Blue Ridge, which was largest of the four tunnels. The Greenwood tunnel was constructed between 1850 and 1854 and was 538 ft. long; it was replaced with an open cut between 1941 and 1943. The Brookville or Brooksville tunnel was constructed between 1851 and 1856, it was 869 ft. long and was demolished in the 1970s and replaced with an open cut. The 100 foot long Little Rock tunnel was completed in 1854, and remains the only one of the four still in service. "Railroad Tunnel Map," Clann Mhor, accessed August 8, 2021, http://clannmhor.org/clannmhor/RRTunnel_Map.html; "Trail Info & Map," Mary E Lyons, ed., *Claudius Crozet*; 424-425; Dan Clement, "Historic American Engineering Record HAER VA-2: Blue Ridge Railroad-Blue Ridge Tunnel," Library of Congress, 1971, <https://tile.loc.gov/storage-services/master/pnp/habshaer/va/va0200/va0253/data/va0253data.pdf>; Dan Clement, "Historic American Engineering Record HAER VA-3: Blue Ridge Railroad-Greenwood Tunnel," Library of Congress, 1971,

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Above the western portal is an empty alcove that once contained a marble tablet containing the names of officials associated with the construction of the BRR and BRT. This tablet was likely removed when the tunnel was abandoned in 1944. It stated:

“This work commenced A. D. 1850, by the Commonwealth of Virginia under direction of Board of Public Works.

President:

John B Floyd, Governor of Va.,

Directors:

Robert Butler, Treasurer,

Robert Johnson, First Auditor,

Stafford Parker, Reg. Land Office,

Claudius Crozet, Chief Engineer,

AM. Dupuy, Assistant Engineer.”⁶

The western end of the tunnel is arched with brick continuously for about 1,460 ft. into the tunnel, and the elliptical shape of the tunnel is easily observed. Originally Crozet bricked 764 ft., and later brickwork that was installed over time accounts for the remaining 694 ft. Several types of brick bonds are seen in the tunnel. There is a section of Flemish bond near the western end. Much of the brickwork on the ribs (or sides) is common bond. The rows of stretchers vary from three to five in places. The crown of the tunnel has running bond. The brick underwent repointing, and replacement bricks were inserted as needed during the 2018-2020 rehabilitation of the tunnel.⁷

Archaeological Potential

During tunnel construction there were a variety of temporary buildings, staging sites, and houses supporting the work which would be located near to both the eastern and western portals. Some of the construction related buildings would include a blacksmith shop, powder house, and various sheds for material and equipment storage. The Irish laborers would have crude, temporary edifices usually referred to as shanties. These could house a family or resemble a bunk house. All of these would be abandoned once the site was completed. Little, if any, evidence of these temporary sites

<https://tile.loc.gov/storage-services/master/pnp/habshaer/va/0000/va0065/data.va0065data.pdf>; and *Richmond Dispatch*, January 28, 1857, newspapers.com.

⁶ Crozet and author James Poyntz Nelson mention the tablet in their works. There are actually two tablets stored at Virginia Military Academy. One was on the eastern portal of the Greenwood Tunnel and the other on western portal of the Blue Ridge Tunnel. A study of the photographs over time leads one to believe that these were removed when the tunnels were declared obsolete by C & O Railroad in 1944. James Poyntz Nelson and Claudius Crozet, *Claudius Crozet: His Story of the Four Tunnels in the Blue Ridge Region of Virginia on the Chesapeake and Ohio Railway, Constructed 1849-1858. Compiled by J.P. Nelson. [with Plates.]* (Richmond, Va.: Mitchell & Hotchkiss, 1917), 12; Elizabeth Dabney Coleman, “The Story of the Virginia Central Railroad:1850-1860” (PhD Dissertation, 1957), 91-92, accessed August 2, 2021, media.proquest.com; Rogers, Phone Interview; and Rogers, Phase 2; and *Richmond Dispatch*, January 28, 1857, newspapers.com.

⁷ Rogers, Phase 2.

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would remain above ground. A one and a half-story frame structure once existed near the eastern portal. It was the watchman's house, but evidence of that was destroyed when the new tunnel was constructed between 1942 and 1944.

There was a 2006 reconnaissance level survey of the area surrounding the tunnel and the proposed trail and trailhead areas. The study was conducted by Rivanna Archaeological Services. The results of the survey identified fourteen previously unidentified historic resources. This area is part of several historic areas.⁸

A Phase I archaeological survey was conducted in September 2010. The survey divided the area into five sections and one hundred shovel test pits measuring 1.5 ft. in diameter were excavated. The first section was the eastern trailhead; it did not yield anything that could be helpful. The second section was the eastern trail leading to the eastern portal. This area did not yield any information. The third section, the tunnel, was not explored due to its rock base containing both historic and non-historic gravel. The fourth section was the trail path from the western portal. This area yielded the most information. A site was identified, site VDHR# 44AU0829, and it was determined worthy of further exploration at some point. The material culture found at this site related to possible tunnel construction and/or association with the Staunton and James River Turnpike. The fifth section, the western trailhead, was found to have much fill, like the first section. The sites that were explored are not in the tunnel and are considered non-contributing to this nomination.⁹

Integrity Assessment

The Blue Ridge Tunnel retains a high degree of integrity of location, setting, feeling, and association. The tunnel is located in a rural area and the scenic view some passengers along the rail saw of the Rockfish Valley on the eastern side remains. The tunnel has only one contributing archaeological resource, site VDHR# 44AU0829. This resource is located on the western side of the tunnel and was identified in a 2010 archaeological investigation. The tunnel retains a large degree of integrity of workmanship, materials, and design. The tunnel was envisioned by Claudius Crozet, and construction of the tunnel was completed using Irish immigrants and some hired enslaved labor using hand tools and black gunpowder. The tunnel was not significantly altered during its use, and the alteration to the interior was reversible. Thus, the original design of the tunnel was restored. The interior remains mostly exposed greenstone on the eastern side of the tunnel with brick arching of about 1,460 ft. on the western side. The eastern portal has exposed rock facing, and the western portal retains its dressed limestone facing.

⁸Rivanna Archaeological Services, LLC, *Phase I Archaeological Survey of the Blue Ridge Tunnel Greenway Project* (Chesapeake, VA: Woolpert Inc, 2020),51.

⁹ Rivanna, *Phase I*, 9, 46-56.

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8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B. Property is associated with the lives of persons significant in our past.
- C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

- A. Owned by a religious institution or used for religious purposes
- B. Removed from its original location
- C. A birthplace or grave
- D. A cemetery
- E. A reconstructed building, object, or structure
- F. A commemorative property
- G. Less than 50 years old or achieving significance within the past 50 years

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Areas of Significance

(Enter categories from instructions.)

ENGINEERING
TRANSPORTATION

Period of Significance

1850–1944

Significant Dates

1850
1856
1858
1944

Significant Person

(Complete only if Criterion B is marked above.)

N/A

Cultural Affiliation

N/A

Architect/Builder

CROZET, CLAUDIUS

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Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The Blue Ridge Tunnel (BRT) is significant at the statewide level under Criteria A and C. Its period of significance spans from 1850 to 1944 and encompasses its construction through the period of regular use by the railroad. Under Criterion A, the BRT is significant for its association with transportation. This tunnel was one of the earliest efforts to cross the Appalachian Mountains and connect the eastern seaboard with the interior of the country. It was the first in Virginia to connect eastern Virginia with the Shenandoah Valley. The railroad proved to be a better transportation alternative than the canals and roads. Rails were proved to be an asset to the Confederacy during the Civil War, the first war in the country to utilize railroads in a significant way. The BRT was excavated primarily with Irish immigrant labor. There was a brief time where enslaved laborers worked at the tunnel in areas away from active blasting such as the bench area, transporting debris from the tunnel, and blacksmithing, and they were the principal workforce that laid rails and did the ballasting and trimming along the section of rail built by the Blue Ridge Railroad Company (BRRC) under the direction of the Virginia Board of Public Works (BPW). The BRT is significant under Criterion C as an excellent example of nineteenth-century engineering. The tunnel remains one of the longest hand-excavated and black-powder-blasted tunnels in the United States. Due to construction without ventilation shafts, the tunnel project's chief engineer, Claudius Crozet, had to create a means of ventilation for which he preferred manual or animal power in lieu of steam that was available at the time. He also needed a means to siphon water from the western end of the tunnel, which was also powered manually or by animal. Another feat of engineering was the temporary track over the mountain gap that was in use from 1854 until 1858 and built under the supervision of Charles Ellet (1810–1862) of the Virginia Central Railroad Company (VCR). There is a documented archaeological site, #44AU0829, but it is yet undetermined whether the nineteenth century material culture found there is related to tunnel construction or to the Staunton and James River Turnpike. The tunnel was recognized by the American Society of Civil Engineers as a National Historic Civil Engineering Landmark in 1976. A plaque was placed at the eastern portal in 2020. The tunnel is included as a contributing source within the Greenwood-Afton Rural Historic District (NRHP 2011). The construction of the Blue Ridge Railroad led to the creation of both the Greenwood and Afton communities which developed around the train depots. Both communities were serviced directly by the railroad and each depot was near to a tunnel.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Criterion A: Transportation

The United States was undergoing industrialization and westward expansion into the interior of the country in the antebellum era. Railroads had developed into one of the fastest, most reliable, and most efficient means of transportation for goods and passengers. It supplanted the canals which were a preferred form of transportation in the early history of the country. The North was ahead of

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the South in industrialization, but the South was catching up, especially in the 1840s and 1850s. The challenge was connecting the eastern seaboard to the west by overcoming the Appalachian Mountains. An earlier success, and one that Crozet compared his work at the BRT with was the Black Rock Tunnel of Pennsylvania. Other tunnels that were contemporary with the BRT include the Tunnel Hill Tunnel of Georgia (the first railroad tunnel of the South), the Cowan or Cumberland Mountain Tunnel in Tennessee, and the Hoosac Tunnel of Massachusetts. The Hoosac surpassed the BRT in length though it was not completed until 1875. All of these significantly improved transportation in their areas.¹⁰

The BRT was the first connection by rail between eastern Virginia and the Shenandoah Valley on the western side of the Blue Ridge Mountains. The BRT was the longest of the four tunnels (BRT, Little Rock, Brooksville, and Greenwood) that were part of the BRRC construction under the guidance of the BPW. The approximately seventeen mile section of railroad was financed by public funds and connected two sections of the Louisa Railroad Company tracks on either side of the mountains. In 1850, the Louisa Railroad Company was renamed Virginia Central Railroad Company (VCR), reflecting the area of rail controlled by the company in the interior of Virginia from Richmond to Charlottesville then west to Staunton. The BRRC assumed risks and challenges of constructing a railway over the mountains that a private company could not afford. The VCR would have the exclusive use of the track, but they had to repay the state before it could obtain ownership of the track. Tunnel construction that occurred from 1850 to 1858, and the first train passed through the tunnel on April 13, 1858.¹¹

The site of the tunnel was chosen because Rockfish Gap was one of the lowest gaps over the mountains, and it was a well-known historic path beginning with the Three Notch'd Road and later, the Staunton and James River Turnpike. The turnpike was in use from 1830; it lost its status as a turnpike in 1864 because the rail had proven to be better for trade and travel. Today, the Rockfish Gap remains a busy hub for transportation. Four major roadways intersect at the gap: Interstate 64, U.S. Route 250, Skyline Drive, and the Blue Ridge Parkway. The Appalachian Trail and U.S. Bicycle Route 76 also pass over the tunnel. The historic tunnel was replaced by a newer rail tunnel in 1944, also known as the Blue Ridge Tunnel.¹²

¹⁰ Aaron W Marrs, *Railroads in the Old South : Pursuing Progress in a Slave Society* (Baltimore: Johns Hopkins University Press, 2009), 11-30, 55-83, muse.jhu.edu; "Black Rock Tunnel | Railroads & Steam Locomotives," American Civil War Forums, accessed October 1, 2021, <https://civilwartalk.com/threads/black-rock-tunnel.151077/>; Richard Cloues, "NRHP Form: Western and Atlantic Railroad Tunnel at Tunnel Hill," National Register of Historic Places, November 6, 2001, <https://npgallery.nps.gov/GetAsset/e6807867-4f5f-4636-9026-0dac063ad3bf/>; Robert E. Dalton, "NRHP Form: Cumberland Mountain Tunnel," National Register of Historic Places, August 22, 1977, <https://npgallery.nps.gov/GetAsset/3eabc3e2-392a-4196-91be-64e6e5da4379/>; and "Hoosac Tunnel," Hoosac Tunnel - Florida and North Adams, MA, accessed October 1, 2021, <https://hoosactunnel.net>.

¹¹ Dabney, 88; Couper, 141, 172; Hunter, 141; Turner, 44-46, 55-59; *Daily Dispatch*, September 18, 1857, virginiachronicle.com; *Richmond Enquirer*, May 17, 1850, September 4, 1857, newspapers.com; *Richmond Dispatch*, October 27, 1857, newspapers.com; *Richmond Dispatch*, December 18, 1857, newspapers.com; and *Staunton Spectator*, April 21, 1858, virginiachronicle.com.

¹² Blue Ridge Tunnel, accessed September 23, 2021, www.nelsoncounty.com/blue-ridge-tunnel/; Dr. Edgar Wood, *A History of Albemarle County, Virginia*, accessed September 23, 2021, <https://issuu.com/stanmauper/docs/albemarle-county>; Nathaniel Mason Pawlett et al., *The Route of the Three Notch'd Road [Virginia] : A Preliminary Report*

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There was only a three-year gap between the opening of the BRT and the beginning of the Civil War. During the war, the strategic advantages of using rail to transport men and equipment to and from the battlefields became apparent. The entire VCR line was very important to the Confederacy and a large target for Federal troops. In 1861, the BRT was the scene of an accident that delayed the trip to Richmond for a group of cadets and their escort, Virginia Military Institute (VMI) professor, Thomas J. "Stonewall" Jackson (1824-1863) from assembling in Richmond and Jackson from receiving his commission in the Confederate Army. During the 1862 Valley Campaign, Gen. Jackson outmaneuvered Federal troops before the Battle of McDowell. He led the Union leadership to believe he and his army abandoned the valley by using a gap near where he could load his men onto a train and have them travel back into the valley through the Rockfish Gap and the BRT. This surprised the Union army which led to the Confederate victory at McDowell. Throughout the war the VCR maintained regular mail service into the valley, and the trains moved civilians and the military between the Piedmont and the Valley until 1864. The VCR and BRT were targeted by the Federal Army for destruction throughout the war. The Confederate army successfully defended the BRT from August 1864 until after the Battle of Waynesboro in March 1865. Gen. Jubal Early (CSA) and his men were scattered by the men under Gen. Phil Sheridan (USA). Sheridan's men followed Early's men, and there are reports from Gen. George Custer and Col. Peter Stagg stating they followed the Confederates over the Rockfish Gap. Their standing orders were to destroy rail lines when they could. This was likely the time when the rails were torn up in the tunnel. The Civil War ended in April 1865. The VCR began repairing their rail lines, and the line into the Valley was one of the earliest restored by July 23, 1865.¹³

In 1868, the VCR merged with the Covington and Ohio railroad to become the Chesapeake & Ohio Railway (C&O). The new company paid off the remaining debt owed to the Commonwealth and took full ownership and maintenance of the tunnel and the remainder of the Blue Ridge Railroad (BRR).¹⁴

Daily maintenance of the tunnel continued after it opened. It was inspected by men who were hired to walk through the tunnel before every daily train reached the tunnel to check for any potential problems. Many of the watchmen lived near the eastern portal of the tunnel. There was a one-and-a-half story frame house seen in some historic photographs of the tunnel. It is unknown when the

(Westminster, Md.: Heritage Books, 2008), <https://www.3chopt.com/pdf/ThreeChoptRoad.pdf>; and Douglas Young, *A Brief History of the Staunton and James River Turnpike*, Charlottesville: Dept. of Highways & Transportation, 1975, accessed September 23, 2021, <https://rosap.nhl.bts.gov/view/dot/23889>.

¹³ Turner 44-46, 53; Robertson, 217-218, 286-287, 369-370, 455; Anderson, 1-4, 43-44; Fletcher, 21, Ramsdell, 794-810; and U.S. War Department, *The War of the Rebellion: A compilation of the Official Records of the Union and Confederate Armies*, 128 vols. (Washington, DC: Government Printing Office, 1881-1901), Serial 090, p 0029; Serial 090, p0513; Serial 090, p 0577; Serial 095, p 0476; Serial 095, p 0517; and Serial 096, p 0794, accessed October 1, 2021, ehistory.osu.edu; Richard G Williams, *The Battle of Waynesboro*, Kindle (Charleston, Sc: The History Press, 2014), loc 938-966; *Staunton Vindicator*, February 12, 1864, March 24, 1865, viriniachronicle.com; *Daily News Leader*, May 12, 1929, April 16, 1940, March 14, 1965, March 21, 1965, April 18, 1965, March 18, 2018, newspapers.com; and *Richmond Dispatch*, September 24, 1864, newspapers.com.

¹⁴ *Staunton Spectator*, January 22, 1867; and Lyons, *Virginia*, 131-132.

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house was razed, but it had disappeared before the construction of the new tunnel in 1942. There are four men who can be documented as tunnel watchmen from 1858 until 1944. The first was David Sheeler (1829-1885) who served from 1858 until his death in 1885. He was associated with the railroad from 1854 when he drove the first locomotive, by cart, over the mountain for use on the Mountain Top Track. His family suffered a tragedy in 1875 when a large boulder broke loose from above the portal and fell on one of Sheeler's young daughters who was playing near the tunnel. Thomas W. Lane (1842-1906) may have replaced Sheeler in 1885. During Lane's tenure, he found an infant in the tunnel that had been thrown from the train. The poor infant boy was dead. It is believed that the county buried him near the tunnel; a grave is mentioned in the archaeological survey. The next documented watchman was William W. Baber (1871-1931). He is listed as the watchman in the 1920 census and as the Afton Station Foreman in the 1930 census. The last watchman was Allen L. Sandridge (1897-1960). He served from 1938 until the tunnel closed in 1944. He was also a guard at the tunnel during World War II. The tunnel was considered vital to the transportation system and was guarded during World War I and World War II.¹⁵

Regular maintenance was important, but there were several times during its usage that the tunnel needed work to accommodate changes and improvements in train cars and locomotives. In 1889, newspaper articles noted that the tunnel would be scaled (shaving rock to widen or heighten the tunnel) in order to allow vestibule trains that were invented by George Pullman in 1887. New and heavier rails replaced the old rails the same year. In 1902, new heavier rails replaced the 1887 rails. The tunnel was again scaled in 1912 for the use of the new H8 locomotives. No further reports were found of scaling or modifications to the tunnel until after its abandonment. By 1942, the tunnel could no longer accommodate taller and wider rolling stock; it was replaced by a new tunnel in 1944. The U.S. Government allowed this new tunnel construction during wartime because it was considered a vital part of the internal transportation system. The C&O originally thought to maintain the tunnel for emergency use, but decided to abandon it. Other uses of the tunnel included a cold storage facility and a storage tank for liquid propane. Neither idea succeeded. From around 1955 until 2001, the tunnel was abandoned and not maintained until Nelson County decided to rehabilitate and reuse it. In 1971, the tunnel was surveyed for the Historic American Engineering Record (HAER); and the documentation is stored at the Library of Congress. In 1976, the tunnel was recognized as a landmark by the American Society of Civil Engineers.¹⁶

¹⁵ James, "Frederick Harris;" *Valley Virginian*, December 17, 1874, virginiachronicle.com; *Staunton Vindicator*, May 8, 1878, May 25 1878, and April 25, 1885, virginiachronicle.com; *Richmond Dispatch*, April 25, 1885, newspapers.com; *The News Leader*, May 24, 1994, newspapers.com; *Alexandria Gazette*, March 20, 1875, newspapers.com; U. S. Federal Census 1890, 1920, 1930, ancestry.com; *Times Dispatch*, October, 4, 1904; "Tunnel Tales," *The Lodger*, 47 (June/July 2021), accessed October 1, 2021, lodgetoldtrail.com; "Allen Lefty Sandridge," *The News Leader*, November 23, 1960, newspapers.com, and *The News Leader*, January 19, 1998, newspapers.com.

¹⁶ *Norfolk Virginian*, Jan 11, 1889, newspapers.com; "The Story of the Pullman Car;" *Staunton Vindicator*, January 11, 1889, virginiachronicle.com; *Alexandria Gazette*, Jan 19, 1889, newspapers.com; *Staunton Spectator*, 19 June 1889, newspapers.com; *Augusta County Argus*, Jun 17, 1902, newspapers.com; *The News Leader*, September 27, 1912, October 31, 1941, May 17, 1942, June 7, 1942, March 1, 1943, September 8, 1943, March 26, 1944, April 13, 1944, May 9, 1944, May 30, 1944, July 19, 1944, newspapers.com; *Richmond Times Dispatch*, May 1, 1953, May 24, 1953; Dan Clement, "Historic American Engineering Record HAER VA-2: Blue Ridge Railroad-Blue Ridge Tunnel," (Library of Congress, 1971), accessed December 14, 2021, <https://tile.loc.gov/storage->

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Between 1865 until 1944, there were many times the tunnel was the subject of newspaper articles. Many of the articles described beautiful scenery of either the Shenandoah Valley or the Rockfish Valley, depending on the direction being traveled. Other articles record the accidents and unusual events that took place in or near the tunnel. A popular story in 1880 involved an escaped murderer who, when recognized, jumped from the train while it was in the tunnel. He lost his foot. In 1882, an article about a head found near the tunnel portal caused a stir until the body was found a few days later. Ollie Grove lost his life in 1907 because a circus train that he and his teenage friends had hopped on was jostled in the tunnel, and several cages and the steam calliope he was on broke loose. No one else was hurt, but one animal died and another got loose and was recaptured.¹⁷

One of the saddest stories occurred in 1910 when the press covered the accident of a poor 18 year old Italian immigrant girl, Virginia Roncali (1892-1910). She and her family were traveling with other Italians in one car, they were all asleep when the train entered the tunnel. Soon the car was filled with smoke, and it scared those in the car who thought the train was on fire. They panicked and tried to escape through windows and the exits, but the forward exit was locked. In the stampede, Virginia was pushed and fell under the train. Her body was mangled, and death was instant. The family stopped their travel long enough to arrange for her burial, then proceeded west. She was buried somewhere in the area, her grave was likely unmarked. In recent times, a local reporter recalled her story and stated that he could not find her grave.¹⁸

[services/master/pnp/habshaer/va/va0200/va0253/data/vao253data.pdf](https://www.nps.gov/services/master/pnp/habshaer/va/va0200/va0253/data/vao253data.pdf); Garvey Winegar, "'Incredible' Feat Listed as Landmark," *The Daily Progress* (Charlottesville, VA), June 4, 197; and American Focus Films.

¹⁷ *Staunton Spectator*, June 5, 1866, Jan 18, 1869, June 13, 1871, July 11, 1871, February 19, 1878, May 27, 1879, March 23, 1880, August 3, 1880, January 10, 1882, May 25, 1887, newspapers.com; *Staunton Vindicator*, February 15, 1867, June 23, 1871, July 11, 1871, August 6, 1875, August 8, 1879, March 5, 1880, March 12, 1880, March 26, 1880, August 3, 1880, November 12, 1880, January 10, 1882, January 13, 1882, June 5, 1885, May 25, 1887, April 1, 1889, April 27, 1899, January 24, 1890, April 10, 1896, May 29, 1896, virginiachronicle.com; *Staunton Daily Leader*, October 24, 1905, October 25, 1905, October 1, 1907, newspapers.com; *Staunton Spectator and Vindicator*, Jul 14, 1905, October 8, 1909; *Daily News Leader*, April 5, 1921, May 12, 1929, October 22, 1930, September 20, 1932, April 16, 1940, newspapers.com; *Richmond Dispatch*, July 22, 1868, September 16, 1864, July 22, 1868, September 30, 1970, September 16, 1874, November 26, 1877, March 2, 1880, March 20, 1880, January 14, 1882, April 9, 1902, newspapers.com; *Yost's Weekly*, April 11, 1892, newspapers.com; *The Free Lance*, July 27, 1901, newspapers.com; *Daily Press*, August 9, 1924, newspapers.com; *Richmond News Leader*, October 24, 1930, newspapers.com; *Valley Virginian*, January 15, 1880, March 25, 1880, newspapers.com; *Valley Virginian*, February 14, 1878, June 5, 1879, August 14, 1879, March 25, 1880, January 12, 1882, virginiachronicle.com; *Alexandria Gazette*, February 15, 1878, September 30, 1870, virginiachronicle.com; *Alexandria Gazette*, October 2, 1907, newspapers.com; *Daily State Journal*, February 21, 1874, newspapers.com; *Daily Times*, September 5, 1901, newspapers.com; *Augusta County Argus*, July 23, 1901, newspapers.com; *Daily Dispatch*, July 22, 1868, March 2, 1880, January 14, 1882, virginiachronicle.com; *Shenandoah Herald*, October 6, 1870, virginiachronicle.com; *Shepherdstown Register*, October 8, 1870, virginiachronicle.com; *Huntington Advance*, January 14, 1875, virginiachronicle.com; *South Branch Intelligencer*, February 13, 1880, virginiachronicle.com; *Evening Journal*, October 25, 1905 October 1, 1907, virginiachronicle.com; *Evening News*, October 7, 1907, virginiachronicle.com; *Lexington Gazette*, October 9, 1907, virginiachronicle.com; *Appomattox and Buckingham Times*, October 9, 1907, virginiachronicle.com; *Culpeper Exponent*, October 11, 1907, virginiachronicle.com; and *Jeffersonian Republican*, March 24, 1880, virginiachronicle.com.

¹⁸ *Staunton Dispatch-News*, September 3, 1910, newspapers.com; *Daily Press*, September 3, 1910, virginiachronicle.com; *The Mathews Journal*, September 8, 1910, newspapers.com; *Staunton Spectator and*

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An elderly woman, Mary Emma Craig (b. 1849), lost her life after an accident in 1923. She, her husband, and daughter were returning to Ohio from a trip to Florida. They were returning to their car after eating, and in the smoke of the tunnel which had entered through an open vestibule door, they became disoriented. Her husband fell first, followed by Mrs. Craig, and their daughter almost fell, but was caught by another passenger. The husband and wife were taken to the hospital and both were recovering. Walton Craig had some injuries, and Mrs. Craig broke her pelvis. Her death certificate states she died a few days later from the shock of the accident.¹⁹

One of the most unusual accidents occurred in 1937. A young man named Reginald Hawse (1912-1937) traveled with a female friend to Washington, D.C. to seek employment. Not having money for tickets, the couple jumped aboard a freight train headed to Covington. They were riding on the tender and to escape the smoke in the tunnels, they climbed into the water tank. Once they had passed through the BRT, they climbed out of the tank. It is believed that an overhead bridge stuck them and Howse fell back into the tank. Mamie Montgomery, his companion, climbed in and kept his head above water until they reached the next station where they were pulled out and Hawse was pronounced dead.²⁰

The tunnel was also used as a shortcut for Dr. Robert Sumter Griffith (1861-1955). He served as a community doctor for both sides of the tunnel from 1891 until 1947. He was also the official doctor and surgeon for both the C&O and Northern & Western railroads for more than fifty years. Sometimes he needed to go to or from the Waynesboro area or Nelson County quickly. He would take his car, a Model T until he upgraded to a Model A in 1937, and drive it along the track through the tunnel. "He always called first to check train schedules in order to avoid a disastrous collision."²¹

From the time the tunnel opened in 1858 until it was abandoned by the railroad in 1944, it was an important connection between eastern and western Virginia. During the Civil War, its importance is noted because the Confederates guarded the area and the Federals targeted it. The Federal government continued to emphasize its significance by placing guards at the tunnel during both World Wars. The number of newspaper articles that recorded various events at the tunnel also underscores its importance as part of the transportation to the local area, region, and state.

Vindicator, September, 9, 1910, virginiachronicle.com; *Evening Journal*, September 2, 1910, virginiachronicle.com; *Alexandria Gazette*, September 3, 1910, virginiachronicle.com; "Tunnel Tales," *The Lodger*, 47 (June/July 2021), accessed October 1, 2021, lodgeatoldtrail.com; David M. Brumfield, "Awful Death in the Tunnel near Waynesboro," News leader, accessed October 1, 2021, newsleader.com; and David M. Brumfield, "Tragedy in the Tunnel," *Lessons from History*, November 24, 2020, accessed October 1, 2021, medium.com.

¹⁹ *Daily News Leader*, March 16, 1923, March 22, 1923, newspapers.com; and *Richmond Times-Dispatch*, March 22, 1923, newspapers.com.

²⁰ *Daily News Leader*, July 15, 1937, July 16, 1937, newspapers.com; *The Bee*, July 15, 1937, newspapers.com; *Daily Press*, July 16, 1937, newspapers.com; *Richmond Times-Dispatch*, July 16, 1937, newspapers.com; and *Suffolk News-Herald*, July 15, 1937, virginiachronicle.com.

²¹ Nancy Sorrells, Independent Historian, all information is held at the Augusta Historical Society and is found on the interpretation board located on the western side of the tunnel.

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Criterion C: Engineering

The Blue Ridge Tunnel is significant under Criterion C for engineering. The BRT was designed and executed under the supervision of Claudius Crozet (1789-1864), the Chief Engineer of the BRRC. The material through which the tunnel was bored was extremely hard greenstone. It was excavated using manual labor, black powder blasting, and no ventilation shafts. It was dug using the header and bench method from both ends and met in the interior of the tunnel. The header (top or crown) was drilled first in a horizontal direction and the bench (floor or base) followed and was drilled in a vertical direction. When the headers met, Crozet's calculations were so accurate that they were less than 6 inches off (some reports say ½ inch apart). Excavation of the tunnel necessitated specialized ventilation and water siphoning systems due to its length. Though steam powered machinery was available, these were not used because of the amount of time need to maintain the equipment, the time lost if these broke, and the costs involved. The apparatuses used were powered by animal and man. The public and the VCR were impatient which led the company to build a temporary track over the gap which would be altered as the various sections of the BRRC were ready to be incorporated in to the main line. The BRT is 4,279 ft. long and the bore measures 16 x 21 ft. It was the longest tunnel in the United States when it was opened in 1858. It can be compared with four contemporary tunnels of the era: Black Rock Tunnel in Pennsylvania, Tunnel Hill Tunnel in Georgia, Cowan or Cumberland Mountain Tunnel in Tennessee, and the Hoosac Tunnel in Massachusetts. Today, the BRT remains the longest surviving antebellum tunnel dug by hand, utilizing black powder blasting, and dug without the use of ventilation shafts.²²

Crozet proposed the Rockfish Gap as a crossing for a railroad in 1839, during his second term as Chief Engineer of Virginia. He suggested this path to the Louisa Railroad Company (which became the VCR in 1850). The Rockfish Gap was one of the lowest gaps along the Blue Ridge Mountains. Crozet stated that two tunnels would be needed, and the longest would measure 4,475 ft. This railroad would connect eastern and western Virginia and would later connect the eastern part of Virginia into the interior of the country. Crozet's idea was tabled for about ten years until the Louisa Railroad Company had constructed rail lines on both sides of the mountain and wished to connect these lines. It was an expensive and risky venture to construct a railroad over mountains; private companies were hesitant to take this risk. The Virginia Legislature saw the benefit in connecting all of Virginia by rail and took the responsibility for the construction as infrastructure expansion under the management of the BPW. The BRRC was created as the construction company for the BPW who hired Crozet as the Chief Engineer to design and supervise an

²²The length of the tunnel is that cited on the Nelson County website, <https://www.nelsoncounty.com/blue-ridge-tunnel/info-map/>. Crozet notes different length measurements in different sources at different times. In an 1849 document to the BPW he stated the tunnel would measure 4261 ft between the upper edges of the deep cut. (Lyons, "Claudius Crozet," 19) In his Specifications for the tunnel, he states 4260 ft. (Lyons, "Claudius Crozet," 420-421). In an 1857 newspaper article he stated it measured 4284 ft (*Richmond Dispatch*, January 28, 1857, newspapers.com). In his final 1858 letter to the PBW he notes the length as 4273 ft. (Lyons, "Claudius Crozet," 398). Coleman, 88: Couper, 141, 172; Hunter, 141; Turner, 35-39; *Wheeling Daily Intelligencer*, January 10, 1857, virginiachronicle.com; *Richmond Dispatch*, January 1, 1867, newspapers.com; "Black Rock Tunnel |Railroads & Steam Locomotives;" Cloues; Dalton; and "Hoosac Tunnel."

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approximately 17 mile section of railroad that connected eastern Virginia with the Shenandoah Valley.²³

Crozet surveyed the area from Mechum's River to the South River. He determined the best path for the railway and the obstacles that needed to be addressed. His specifications divided the work into 16 sections that were to be individually contracted for construction. He detailed culverts, bridges, railbeds, tunnels, and other details necessary for completion of the work. His 1849 specifications included descriptive information for two tunnels; however, in an 1849 letter to the BPW, Crozet added a third tunnel. A fourth tunnel of 100 ft. was added in 1853 because it was cheaper and easier than creating an open cut.²⁴

Crozet justified his design and specifications in the 1849 letter to the BPW. He stated the tunnels would be set between deep cuts with cow pits. These cow pits would prevent cattle from wandering into the tunnels. The tunnels were to be in the shape of an ellipse, not the usual round head arch, and the interior would measure 16 x 21 ft. in width and height, respectively. Crozet chose the shape of the tunnel because of the hard metamorphic rock. He believed the shape would be stronger, prevent collapse, and would be cheaper to blast. He was also hoping that interior of the tunnel would be stable to the point of eliminating the need for interior arching. The size of the bore would allow room on either side of the cars for people and accommodate side ditches for water drainage. The height of the tunnel would allow for the chimney stacks and proper draft for ventilation of the tunnel.²⁵

The largest of the three proposed tunnels would measure about 4,260 ft. in length and would be constructed without ventilation shafts. Ventilation shafts were deemed unnecessary, because the depth of the tunnel was 500 ft. below the gap, and they were costly to create. Crozet included in his specification that if the contractor wanted shafts that they could be constructed at his expense. The tunnel was to be constructed from both ends simultaneously using single-jack and double-jack drilling methods and black powder blasting. The work was to be carried out 24 hours a day using teams working in shifts. In the beginning, there were two shifts. It was increased to three shifts about 1853. Crozet said the western portal of the tunnel was to be located near the old Toll house along the Staunton and James River Turnpike. This road would have to be diverted as would a creek that flowed through the construction area. Another problem to overcome would be to create a curve and proper grading to approach the tunnel because the rail path would meet at a right angle to the tunnel.²⁶

Three tunnel sections of the railroad were contracted to a man named John Kelly. Section 1, the main tunnel, belonged to John Kelly and his partner, John Larguey. They were not the original contractors for the BRT. The original contractor, John Rutter, was unable to meet his contractual

²³ Couper, 127; Hunter, 140; Middleton, 111; Lyons, "Claudius Crozet," 408-430, and Putnam, 2334.

²⁴ Lyons, "Claudius Crozet," 17, 54, 225, 232, 246, 284, 408-430; *Richmond Dispatch*, January 28, 1857, newspapers.com; Coleman, 101, 124; Hunter 140-142, and Couper, 130-131, 156.

²⁵ Lyons, "Claudius Crozet," 18-26, 408-430; Cullen, 41-46; Warden, 44-55; Coleman, 109; and Couper, 129-130.

²⁶ Lyons, "Claudius Crozet," 49, 75, 110, 209, 408-430; and Couper, 130-131.

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obligations, and the contract was re-let. The second contract was let between February and March of 1850 which caused a delayed starting the construction at the Tunnel. John Kelly had the contracts for the other tunnels as well. These tunnels are referred to as Brooksville and Greenwood. These were shorter tunnels but would need to meet the bore size and shape specifications set for the main tunnel (BRT).²⁷

The deep cuts approaching the tunnel on both ends were under construction beginning in 1850. These cuts were worked like the tunnel with header and bench construction. Crozet noted that the headings were the concentration of the work so they could get to the tunnel as soon as possible. He says the western header was opened on August 1, 1850. He gives two different dates for the opening of the eastern header. In an October 1850 letter, he stated the opening of the eastern header occurred on September 28, 1850, but in an 1857 newspaper article, he says it was opened in January 1851. The headings met inside the tunnel on December 29, 1856, and when these met they were less than six inches off (some reports claim less than ½ inch). The eastern side of the tunnel was worked quicker because the condition of the rock was more stable. This side did not need much arching, and the portal on this side did not need finishing as well. There is a small area on the east that is arched. The reasoning behind this is unknown, because Crozet never mentions this work. The western end of the tunnel was the most challenging with varying rock conditions and water problems. The western portal has a finished portal designed according to Crozet's 1849 specifications using cut limestone instead of sandstone because it was easier and cheaper to obtain.²⁸

The method for hand-drilling the production holes for the blasting utilized both the single and double jacking processes to bore a hole to the depth needed in which to place the charge. Single jacking, according to Dr. Gary K. Rogers, was a two man team with one striking the drill steel and the second man rotating the steel before the next strike. The single-jack method was likely used to start the production hole. Double jacking is a three man team with the steel being struck alternatively by two men and the third rotating the steel after each strike. Drilling took a long time because the steel would become dull quickly due to the hard rock. Once a hole was deep enough and depending on the conditions of the site, the powder might be poured directly into the hole or, if damp, the powder wrapped in a tube or wax paper. Then the hole would be filled with gravel or sand and the wick from the powder would be lit. After the blast, the loose rock (muck) would be removed from the blasted area and from the tunnel. Crozet started with two shifts a day working on both sides of the tunnel and, in 1853, he was able to have three shifts working around the clock. A full shift (approximately 30 men) would require more than one man at each of the positions of

²⁷Kelly and Larguey originally had a silent partner, Christian Detmold, whose name disappears from subsequent contracts. Lyons, "Claudius Crozet," 71-72, 209, 364, 420-423; Couper, 131-132 (the author refers to him as Detwald instead of Detmold); Coleman, 62; Warden, 50; and *Richmond Enquirer*, July 31, 1849, December 21, 1849.

²⁸ Lyons, "Claudius Crozet," 29-30, 32, 49, 54, 90, 126, 128, 408-430; *Richmond Dispatch*, January 28, 1857, newspapers.com; and Couper 166-167.

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header, floorer (working on the bench), blaster (who set the charges), muckers, and outside the tunnel, a blacksmith and assistants to continuously sharpen the drill steels.²⁹

The main tunnel was Crozet's focus, but he also had to contend with the challenges of the Brooksville and Greenwood Tunnels; both are located to the east of the BRT. The Brooksville Tunnel was 869 ft. long and the Greenwood Tunnel was 538 ft. The Brooksville Tunnel was constructed between 1850 and 1856. During its construction, two interior collapses required extensive brick lining throughout the tunnel. During the Civil War, a large crack within the tunnel had to be repaired. The Greenwood Tunnel was constructed between 1850 and 1853. The rock was so unstable that this tunnel also required extensive arching. Neither tunnel remains in use. The Brooksville tunnel was demolished around the 1960s and 1970s when Interstate 64 was constructed. The Greenwood Tunnel was abandoned and sealed in 1944.³⁰

Crozet needed to find ways to ventilate and pump water out of the work areas. Fresh air had to be pumped into the tunnel from the ends because Crozet did not want ventilation shafts due to the depth of the tunnel within the mountain and the higher costs associated with digging shafts to that depth. Ventilation was necessary because the blasting created a lot of smoke and the work space was so close that there was no other way to get fresh air into the work area. Crozet used an earlier idea based on the mechanism detailed in Field Marshal Sir John Fox Burgoyne's *A Rudimentary Treatise on Blasting and Quarrying*. Crozet improved and adapted the apparatus to the needs of the Tunnel, including having it work at a distance of about 2000 ft on a slope. The pump was driven by mules. A diagram in Burgoyne's book showed a smaller tub suspended above a larger one that was filled with water. When the small tub dropped, it activated a valve that would draw air out and create circulation. Gutta percha was the material used for the pipes. Crozet employed several mechanics to help him build and maintain both the air pump and the siphon. Crozet refused to use steam powered machines because Crozet viewed them as costly to maintain, and any repairs that needed to be done would involve time and a shutdown of work at the tunnel.³¹

²⁹ Dr. Gary K. Rogers, PE, PhD is a Mining and Geotechnical Engineer and a member of the Claudius Crozet Blue Ridge Tunnel Foundation and was an advising expert for the possible rehabilitation of the tunnel. Lyons, Claudius Crozet, 71,72, 209, 364, 420-423, glossary; Coleman, 62; Warden, 50 "Blue Ridge Railroad," *Richmond Enquirer*, July 31, 1849, newspapers.com; "Blue Ridge Tunnel," *Richmond Enquirer*, December 21, 1849, newspapers.com; "The Use of Black Powder and Nitroglycerine on the Transcontinental Railroad," *The Transcontinental Railroad*, 2012, railroad.lindahall.org; Peter Shishkov, "Dubrovnik International ESEE Mining School-DIM ESEE 2020," 2020, [Peter-Shishkov---Advanced-Blasting-Solutions-for-Exploitation-in-Small-Mining-Sites\(1\).pdf](http://Peter-Shishkov---Advanced-Blasting-Solutions-for-Exploitation-in-Small-Mining-Sites(1).pdf); Rogers, Phone Interview; and Clann Mhor, accessed August 2, 2021, <http://clannmhor.org/clannmhor/Payroll.html>.

³⁰ Lyons, "Claudius Crozet," 23, 56-57, 59, 70-72, 76-79, 81-83, 89, 93, 96, 113, 116, 122-123, 131-132, 137-138, 144, 156, 159-161, 191, 202-206, 210, 213, 217, 220, 226-231, 239, 243, 247-248, 253, 263-267, 285, 292-293, 297-298, 304-310, 320-322, 341-342, 347-353, 359-360, 363, 369, 382, 392-393, 401, 407; Nelson, 5-8; Couper, 136-159; Hunter 142, 151, 145-146, 153, 157-159; Dan Clement, "Historic American Engineering Record HAER VA-3: Blue Ridge Railroad-Greenwood Tunnel," Library of Congress, 1971, <https://tile.loc.gov/storage-services/master/pnp/habshaer/va/0000/va0065/data.va0065data.pdf>; and "Transportation Tunnels in Virginia," www.virginiaplaces.org, accessed November 7, 2021, <http://www.virginiaplaces.org/transportation/tunnels.html>.

³¹ Lyons, "Claudius Crozet," 177-180, 190, 193-194, 199, 211, 219, 236, 266, 316, 398; Hanson, 40-41; Coleman, 117; Couper, 139; Hunter, 148-150; and *Daily News Leader*, January 9, 1967, 1-2, newspapers.com.

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The water siphoning pump was such a novel solution that Crozet wrote an article describing it. The article was published posthumously. The length of the siphon was 1,792 ft. There was 563 ft. of piping inside the tunnel and 1,229 ft. outside. The water level was 9 ft. below the summit and had an outside fall of 29½ ft. It used three inch diameter iron faucet pipes with a common faucet cock at each end to close it when it needed to be refilled with water. There was a large air vessel at the summit to let air out and replace it with water. The pump had to work uphill and over a long distance. There was an apparatus at the top of the tunnel that replaced water with air. It worked by means of chain pumps. To get the lengths of pipe airtight, the pipes were sealed with a cement made of white and red lead mixed with Japanese varnish and boiled linseed oil. It required adjustment every two hours. This pump was so effective that Crozet said it pumped 43½ gallons of water per minute.³²

Crozet hired several machine specialists to create the ventilation machine and the water siphon. He hired Paul Stevens (b. c.1806) to help construct the ventilation for the tunnel. He was listed as a machinist on the Cumberland Railroad in 1850. According to Crozet, Stevens overstated his experience, and he seemed to have been a troublemaker. Crozet blamed him for causing the 1853 strike. Stevens left, and Crozet replaced him with William Crouse (1816-1865). He was a machinist working in Waynesboro and came with good credentials. However, Crozet believed that his salary was too expensive, and he was soon let go. Crozet then hired an apprentice of Crouse, Francis B. Clopton (1830-1865). Crozet refers to him as W. F. B. Clopton and Francis Clopton in his various letters. He worked at the tunnel until about 1854. He completed the work on the ventilation and the pumping mechanisms.³³

Obtaining a large amount of bricks for the arching of the tunnels was another challenge to constructing the tunnel. Crozet specified that he required burnt bricks of good quality for the arching. It was a difficult task because the quality and condition of the bricks depended on obtaining a good clay and ensuring the bricks were properly fired in the clamp. Crozet tested some of the bricks he received to demonstrate their suitability for use in arching the tunnels. He put them under pressure, and he drove a piece of iron through some of the brick. There were several areas near the tunnels where good clay was found. The Greenwood and Brookville tunnels were lined throughout most of their interior, and these two tunnels had brick-faced portals. Crozet had specified dressed stone portals, but only the western portal of the Blue Ridge Tunnel was dressed with stone as he specified. There were several people with whom Crozet contracted to make bricks; only two were contracted for the tunnel: Robert Richardson (1808-1890) and John W. Walker (1812-1865).³⁴

³²Lyons, "Claudius Crozet," 161, 210, 219, 224, 236; Crozet, 111-116; Coleman, 116-117; Couper, 139; Hunter, 150; and *Daily News Leader*, January 9, 1967, 1-2, newspapers.com.

³³ Lyons, Claudius Crozet, 179-180, 191-197, 219, 224, 238, 266, 287, 291,316; 1850 US Federal Census, ancestry.com; Coleman, 84; and Hunter 148-149,155.

³⁴ Robert Richardson (1808-1890) lived in Fluvanna County, Virginia. He moved his operation to somewhere on the western side of the tunnel because he is referred to as a Waynesboro brickmaker. John W. Walker (1812-1865) was noted as a brickmaker, and he was employed as railroad contractor for the Louisa Railroad in the partnership of Mason & Walker. Walker was contracted by John Kelly, not Crozet, in 1857 to make bricks for the tunnel. The state could no longer financially support the construction, so Kelly took the financial burden upon himself to finish the

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Crozet predicted the construction on the tunnel would only take about three years, but he was slowed by the rock. The VCR and public became impatient. To get this vital line operating as soon as possible, the VCR asked their Chief Engineer, Charles Ellet, Jr. (1810-1862), to construct a temporary rail over the gap that could be adjusted to include the BRR line as it became operational. Ellet designed the Mountain Top Track between 1853 and 1854. This construction lured workers from the tunnel and irked Crozet. It occurred when there was a shortage of workers and after a major strike. Ellet wanted this accomplishment recognized and published an article about the work. He described the track as crossing a very narrow ridge and having a curve with a 300 ft. radius. He states, “there was not experience to guide the writer in the arithmetical determinative of the influence of such curvature as was necessary to introduce upon this road, and the proper diminution of the slope required on the curves to compensate for the increased traction which would there be due to the curves.” He created the railway from his own conjecture and knowledge. He had to adapt locomotives that were already specially designed with such things as additional brakes, and travel along the track was slow. He notes the danger of the track and further states, “with care to observe the rules prescribed, and to keep within the authorized loads and speed, they are quite safe as, if they are not safer than, ordinary railways worked with ordinary care.” He praises the Superintendent of the track and machinery, George S. Netherland (1821-1879).³⁵

Progress at the tunnel averaged about 26 ft. on each side per month. The progress of the tunnel was hampered by ever changing conditions with the rock and water in the rock. The first train went through the tunnel on April 13, 1858. For a time, the brick arching continued despite regular use. This work was supervised by Crozet’s replacement, Charles B. Fisk (1806-1866). The impatient public accused Crozet of making the tunnel too narrow, and requiring more work; however, the report was proven false. Crozet had a full-size model to use to check the interior for areas that might require further scaling, but his size calculations were correct for cars to pass. To understand the spatial relation between the tunnel and the cars traveling through the tunnel there is a description from a soldier who traveled through the tunnel on top of a boxcar in 1862. He stated, “The tops of the cars were well strewn with men when we entered the tunnel and we had to lie down and flatten out, but the feeling of insecurity was felt in entering, for there appeared but little room between the roof and the top of the tunnel. There were reported two men crippled and one

tunnel and was to be reimbursed by the state after construction was completed, the partnership was finally paid all its money from the state in 1884. Lyons, Claudius Crozet, 299-300, 307, 318-325, 344, 379, 407,414-424; Hunter, 143, 146, 151, 158-159; Couper, 149; Lyons, Virginia, 19-20; Michael J Pulice, *Nineteenth-Century Brick Architecture in the Roanoke Valley and beyond : Discovering the True Legacies of the Deyerle Builders* (Roanoke, Va.: Historical Society Of Western Virginia, 2011), 34-35; Palmer C Sweet, “History of Brick in Charlottesville and Albemarle County,” *Virginia Minerals*, August 1998, dmme.virginia.gov; Lyons, Slave 88, 92; and Robert Reid Howison, *Reports of Criminal Trials in the Circuit, State and United States Courts, Held in Richmond, Virginia* (Buffalo, Ny: Dennis, 1950), 67, books.google.com.

³⁵ Charles Ellet, “The Mountain Top Track:—a Description of the Railroad across the Blue Ridge at Rock Fish Gap, in the State of Virginia,” *Journal of the Franklin Institute* 63, no. 4 (April 1857): 217–24, [https://doi.org/10.1016/s0016-0032\(57\)90653-1](https://doi.org/10.1016/s0016-0032(57)90653-1); Charles Ellet, Jr, *The Mountain Top Track : A Description of the Railroad across the Blue Ridge at Rock Fish Gap, in Virginia* (Philadelphia: T.K. & P.G. Collins, 1856), books.google.com; Lyons, “Claudius Crozet,” 212, 219, 222, 225, 240-255, 257, 270-285; Coleman, 127-151; Hunter, 149-153; and Couper, 141, 161-164, 171.

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of them with a broken leg.” This tight fit would ultimately lead to the tunnel’s eventual replacement and abandonment.³⁶

A better perception of the tunnel may be grasped by comparing it to tunnels of roughly the same era. Crozet compared his work in 1857, with Black Rock Tunnel in Pennsylvania. This tunnel was constructed between 1835 and 1857. It was 1,931 ft. in length and measured 19 x 17 ft. This tunnel was elliptical in shape, unlined, and constructed using the same methods as the BRT. This tunnel was the first in the United States to use ventilation shafts. Crozet calculated a comparable price model between this tunnel and the BRT. He claimed the only difference was that labor prices were higher in the 1850s than in the 1830s. There are three other tunnels to compare it with as well. These are Tunnel Hill in Georgia, the Cowan Tunnel in Tennessee, and the Hoosac Tunnel in Massachusetts. Tunnel Hill and Cowan were both constructed about the same time as the BRT. These were constructed in the south with manual labor groups consisting of the Irish and hired enslaved workers. Neither was as long as the BRT. Tunnel Hill was 1,477 ft. and the Cowan Tunnel was 2228 ft. Tunnel Hill was one of the earliest tunnels constructed in the south and did not use ventilation shafts. The Cowan Tunnel was considered a feat of engineering, but the BRT surpassed its length in 1858. The BRT was the longest tunnel in the United States at its opening in 1858. The Hoosac Tunnel in Massachusetts became the longest in 1875 with a length measuring 4.75 miles. Construction began in 1851 but due to financial problems the work stopped and started several times. It was created with ventilation shafts, using both manual and pneumatic drilling, and with both black powder and nitroglycerin blasting. While the Hoosac tunnel surpassed the BRT in length, the BRT remained the longest completely hand-dug and black powder blasted tunnel without ventilation shafts.³⁷ (See attached comparison table.)

³⁶ Rogers, Phone Interview; Phil James, “Secrets of the Blue Ridge: Rockfish Gap through Afton Mountain | Crozet Gazette,” Crozet Gazette, November 5, 2012, <https://www.crozetgazette.com/2012/11/05/secrets-of-the-blue-ridge-rockfish-gap-through-afton-mountain/>; Charles Ellet, Jr, *The Mountain Top Track : A Description of the Railroad across the Blue Ridge at Rock Fish Gap, in Virginia* (Philadelphia: T.K. & P.G. Collins, 1856), books.google.com; Couper, 141,161-164,171; Hunter 149-151; Lyons, “Claudius Crozet,” 179, 364; Coleman, 85, 88-89; Warden, 51-53; “First Hand Accounts,” Clann Mhor, accessed August 2, 2021, http://clannmhor.org/clannmhor/First_Hand_Accounts.html; “The Work at the Blue Ridge Tunnel,” *Richmond Dispatch*, October 27, 1857, newspapers.com; “The Tunnel,” *Daily Dispatch*, October 19, 1857, virginiachronicle.com; and William A Fletcher, *Rebel Private: Front and Rear : Memoirs of a Confederate Soldier* (1908; repr., NY: Penguin Group, 1997), 21.

³⁷ *Richmond Dispatch*, January 28, 1857, newspapers.com; Richard M. Casella, “Philadelphia & Reading Railroad: Black Rock Tunnel HAER No.PA-520,” 1993, <https://tile.loc.gov/storage-services/master/pnp/habshaer/pa/pa3700/pa3726/data/pa3726data.pdf>; American Civil War Forums; Thomas E. Bailey, “Storm on Cumberland Mountain: The Story of the Cowan Pusher District,” *Tennessee Historical Quarterly* 34, no. 3 (1975): 227-48, <https://www.jstor.org/stable/42623530>., “Cowan Railroad Museum,” cowanrailroadmuseum.org, accessed October 1, 2021, <https://cowanrailroadmuseum.org>., Dr. Andrew Rittenberry, “Cowan: Its History and Heritage,” *Franklin County Historical Review* II, no. I (December 1970), www.visit.cowan.com/uploads/4/0/4/10/40407725/cowan_its_history_and_heritage.pdf; Richard Cloues; Robert E. Dalton; “CSX - Cumberland Mountain Tunnel,” Bridgehunter.com, accessed October 1, 2021, <https://www.bridgehunter.com/tn/franklin/cumberland-mountain-tunnel>; “Cumberland Mountain Tunnel,” accessed October 1, 2021, <https://npgallery.nps.gov/AssetDetail/3eabc3e2-392a-4196-91be-64e6e5da4379>; “Hoosac Tunnel,” Hoosac Tunnel - Florida and North Adams, MA, accessed October 1, 2021, <https://hoosactunnel.net>., “Hoosac Tunnel (Massachusetts): Map, Length, Location, History,” American-Rails.com, accessed October 1, 2021, <https://www.american-rails.com/hoosac.html>., “Hoosac Tunnel,”

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Tunnel Comparisons

	Black Rock, PA	Tunnel Hill, GA
<u>Construction Dates</u>	<u>1835-1837</u>	<u>1848-1850</u>
Length	1931 ft	1477 ft
<u>Width X Height</u>	<u>19 x 17</u>	<u>unknown</u>
Shape	ellipse	round
<u>Ventilation Shafts</u>	<u>yes</u>	<u>no</u>
Construction	hand drill	hand drill
<u>Blasting</u>	<u>black powder</u>	<u>black powder</u>
Extra	still in use 2 nd tunnel constructed in the US	new use-recreation 1 st tunnel constructed in South
	Cowan, TN	
<u>Construction Dates</u>	<u>1849-1852</u>	
Length	2228 ft	
<u>Width X Height</u>	<u>12 x 17</u>	
Shape	round	
<u>Ventilation Shafts</u>	<u>no</u>	
Construction	hand drill	
<u>Blasting</u>	<u>black powder</u>	
Extra	still in use	
	Blue Ridge, VA	Hoosac, MA
<u>Construction Dates</u>	<u>1850-1858</u>	<u>1851-1875</u>
Length	4279 ft	4.75 mi
<u>Width X Height</u>	<u>16 x 20</u>	<u>24 x 20</u>
Shape	ellipse	round
<u>Ventilation Shafts</u>	<u>yes</u>	<u>no</u>
Construction	hand drill	hand and pneumatic drill
<u>Blasting</u>	<u>black powder</u>	<u>black powder and nitroglycerin</u>
Extra	new use-recreation longest in US 1858-1875	still in use 6 th longest in North America currently

www.asce.org, accessed October 1, 2021, <https://www.asce.org/about-civil-engineering/history-and-heritage/historic-landmarks/hoosac-tunnel>., Edward S Martin, *History of the Hoosac Tunnel : With Illustrations*. (Boston: E.S. Martin, 1878), books.google.com., Matt Ristaino, "New Booklet Tells the Story of the Historic Hoosac Tunnel," spectrumnews1.com, September 21, 2021, <https://spectrumnews1.com/ma/worcester/news/2021/09/21/hoosac-tunnel-history-booklet>.

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Abandonment, Nature, and Reuse

In 1944, the C&O Railway was undecided about whether to maintain the tunnel as an alternate tunnel for emergency use or to abandon it. The company decided to abandon it, but attempted to find alternate uses. The newspapers noted that the tunnel was considered for use as cold storage because the surrounding orchards and farms had need of such a space. The site was deemed suitable because of the constant temperature within the tunnel of about 56 degrees F. Construction of bulkhead walls within the tunnel could accommodate several different types of fruits or garden produce. The article mentioned that a mechanical conditioner and air ducts could be installed to help prevent spoilage. There is no evidence this idea was ever attempted.³⁸

In 1953, the C&O was seeking new revenue sources and entered into a ten year lease with the Bottled Gas Corporation of Virginia. The company would be allowed to construct a tank for the bulk storage of liquid propane gas. An article in the paper describes the process of converting the tunnel into a tank. The faults and jointing within the rock mass had to be sealed and, since there were so many within the tunnel it would not be profitable to use the entire tunnel. The Intrusion Prepakt Corporation used an area measuring 1,750 ft. in length within exposed rock section of the tunnel and constructed two bulkhead walls to create the containment area. The construction process was to seal the faults and sandblast the rock to remove both soot and debris. The west wall was constructed first, then the debris was power-washed and flushed out of the tunnel using its eastward slope. The interior walls were sprayed, and the east wall erected. They erected two large, approximately 10 foot thick steel-reinforced, concrete walls. Each wall had a 27 inch diameter pipe to allow access into the chamber between the walls. A description in the 2006 study stated that there was evidence that they were unable to create a tight seal between the rock and the concrete. The experiment was apparently scrapped because there was no further mention of the venture in period newspapers.³⁹

The tunnel was again abandoned to the elements. The bulkhead walls, installed by the gas company, destroyed the original drainage pattern. Water began to pool in areas of the tunnel and further damage resulted from the tremendous rain and flooding during Hurricane Camille in 1969. Factors such as the normal freeze/thaw cycle, lack of maintenance, and vandalism led to its deteriorated state that existed before Nelson County took interest in restoring and preserving the tunnel.⁴⁰

There is also evidence that may suggest that two earthquakes affected the conditions of the tunnel. In an article titled "Claudius Crozet: Napoleon's Captain versus the Blue Ridge," there is a c. 1925 photograph of the western portal with the marble dedication tablet still intact. The area above the opening and at the tablet is an area exhibiting damage due to some earth pressures. The crack in the wall follows mortar lines, and the movement cracked the marble tablet. Dr. Gary Rogers noted

³⁸ *The News Leader*, May 9, 1944, newspapers.com.

³⁹ *Richmond Times Dispatch*, May 1, 1953, May 24, 1953, newspapers.com; and Rogers, Light.

⁴⁰ Rogers, Light.

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that the damage he saw could have resulted from one or both of the major earthquakes of the late nineteenth century: the Charleston earthquake of 1886 and the 1897 Giles earthquake. He also noted that some of the damaged brickwork in his 2006 feasibility study on the interior arching may have also resulted from these earthquakes.⁴¹

In 2001, Nelson County began looking into opening the tunnel as a public recreational site. The idea was to use it for pedestrians and bicyclists. A feasibility study, conducted in 2006, determined the tunnel to be stable but in need of restoration and adaption to make it safer. The following year, Nelson County purchased the tunnel from CSX Corporation (the successor to the C&O Railway) with the donation of a two dollar bill (one dollar for the purchase of the tunnel and one dollar as the first donation for the Claudius Crozet Blue Ridge Tunnel Foundation). The Claudius Crozet Blue Ridge Tunnel Foundation was then formed. This began a public-private partnership that was responsible for overseeing the restoration and interpretation of the site. In 2013, the easements and land required for the trail and trailheads were purchased.⁴²

The three phase plan for the project began in 2014, and it was completed in 2020. Phase 1 was the creation of the parking area, trailhead and trail at Afton depot on the eastern side of the tunnel. The .63 mile trail leading to the tunnel utilized the original trail bed, and the work finished in 2015. Phase 2, beginning in 2016, was the most intensive work because it involved the restoration and rehabilitation of the tunnel. The interior walls were removed. The exposed rock was stabilized through such techniques as rock bolting, shotcreting and scaling. The interior arching was stabilized through the use of replacement bricks, shotcreting, and scaling. A complete repointing of the interior arching was recommended. Drainage on the interior was restored and improved through new trail/road surfacing. A dry-laid stone retaining wall above the eastern portal was erected to help with water draining over the face of the portal. Restoration work on the tunnel continued until 2020. Phase 3, the creation of a .80 mile trail, trailhead, and parking area on the western side of the tunnel, near Interstate 64, began in 2018 and was completed in 2020. The entire length of the trail, one way is 2.25 miles. In September 2020, a small crowd consisting of those involved with the rehabilitation and including the Governor dedicated the National Historic Civil Engineering Landmark plaque. This ceremony was kept small due to the Covid pandemic. The trail opened for public use in November 2020.⁴³

⁴¹ William E. Warden, "Claudius Crozet: Napoleon's Captain versus the Blue Ridge," *Railroad History*, no. 129 (1973): 44–55, <https://www.jstor.org/stable/43524904>. Rogers, Interview; and Gary Rogers, PE, PhD, "Preliminary Stability Assessment for Claudius Crozet's Blue Ridge Tunnel" (Roanoke, VA: The Whitsell Group, 2006).

⁴² American Focus Films, "The Tunnel," *YouTube*, March 13, 2021, <https://www.youtube.com/watch?v=IRJGKjT-ahQ>; Rogers, Phone Interview; Whitsell Group. *Restoration of the Blue Ridge Tunnel*, 2008; "Blue Ridge Tunnel Rehabilitation and Trail Project Nelson County, Virginia Population: 14,930 PROBLEM STATEMENT/ EXECUTIVE SUMMARY the Blue Ridge Tunnel: Turning an Abandoned Railroad Tunnel Built in the 1850s into a Regional Recreational Amenity," accessed August 3, 2021, <https://www.vaco.org/wp-content/uploads/2021/07/NelsonCountyBlueRidgeTunnelRehabTrailProject.pdf>.

⁴³ In 1971, the Historic American Engineering Record (HAER) surveyed the tunnel. The documentation of this survey included photographs, measured drawings, and a written report. In 1976, the American Society of Civil Engineers designated the site as a National Historic Civil Engineering Landmark. A newspaper article noted that a plaque was to be placed at the site, but it is not known if this was done and no evidence of a plaque has been found. Dwayne Jones, "Restoration of the Blue Ridge Tunnel Is Underway," *Claudius Crozet Blue Ridge Tunnel*

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Crozet and Peoples Associated with Tunnel Construction

Claudius Crozet

The BRT is associated with was Claudius Crozet (1789-1864). Crozet was trained as artilleryman and a civil engineer. He was veteran of the Napoleonic Wars and was a prisoner of war in Russia. He immigrated to the United States in the early nineteenth century and became a noted educator in mathematics and engineering who taught in four different institutions including the U.S. Military Academy at West Point, NY and the Virginia Military Institute (VMI) in Lexington, VA. He served as Chief Engineer of Virginia three times and as the Chief Engineer of Louisiana, then Chief Engineer of New Orleans. In Virginia, he worked on the canals and roads, but his best known work is the BRR and the supervision of the BRT construction. The BRT was the longest tunnel in the United States until the Hoosac Tunnel of Massachusetts was completed in 1875.

Claudius Crozet was born in 1789, soon after the death of his elder brother, Benoit. He was the son of a merchant living in Villefranche, Rhone, France. Little is known about his childhood. His mother died when he was ten, and he must have received a good foundational education because he passed the very competitive exams for entry into Ecole Polytechnique. The Ecole Polytechnique was a two year school, located in Paris, for training all engineers. In 1807, he was sent to the artillery school in Metz where he graduated in 1809.⁴⁴

After graduation, he was commissioned as a 2nd Lieutenant and assigned to Napoleon's headquarters. He arrived just in time to participate in the Battle of Wagram (July 5-7, 1809). After the battle, he was sent to Germany, then to Holland where he was utilizing his civil engineering skills building bridges. In 1812, he was part of the Grand Armee and was sent to Russia. During the Battle of Borodino (September 1812), Crozet was taken prisoner by a Russian nobleman. This nobleman favored Crozet and treated him more like a guest than a prisoner for two years, until Napoleon abdicated and went into exile.⁴⁵

Crozet returned to Paris in 1814 and when Napoleon returned, he rejoined Napoleon's army in 1815. He did not arrive at Waterloo in time to fight. Louis XVIII was restored to power for a

Foundation, accessed August 9, 2021, <http://blueridgetunnel.org/current-status-94/>; "Restoration of Historic Blue Ridge Tunnel Is Nearing Completion," Colman Engineering, PLC | Civil, Environmental, and Water Resources Engineering Services, accessed August 9, 2021, <https://www.colmanengineering.com/blog/restoration-of-historic-blue-ridge-tunnel-is-nearing-completion>; Rogers, Light; "Nelson County Parks and Recreation Announces the Opening of the Blue Ridge Tunnel | Nelson County," Nelson County, accessed August 9, 2021, <https://www.nelsoncounty-va.gov/2020/11/20/nelson-county-parks-and-recreation-announces-the-opening-of-the-blue-ridge-tunnel/>; "Centennial Celebration – ASCE Virginia Section," accessed August 3, 2021, <http://ascevirginia.org/centennial-celebration/>; American Focus Films; Clement, HAER VA-2; Clement, HAER VA-3; and Garvey Winegar, "'Incredible' Feat Listed as Landmark," *The Daily Progress (Charlottesville, VA)*, June 4, 1976; Rogers, Phone Interview.

⁴⁴ Couper, 5-10; Hunter, 1-10; "The Late Col. Claude Crozet," *Richmond Dispatch, February 12, 1864, newspapers.com*; and Francine Masson, "Benoit or Claude?," *Bulletin de La Sabix, Societe Des Amis de LA Bibliotheque et de l'Histoire de L'Ecole Polytechnique*, 6 (June 1, 1990), 10-12.

⁴⁵ Couper 9-26; Hunter, 11-15; and *Richmond Dispatch, February 12, 1864, newspapers.com*.

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second time, and Crozet was relieved of his duties. He officially resigned and decided to immigrate to the United States. In 1816, he married Agathe De Camp and soon thereafter immigrated to the United States where he was appointed to the United States Military Academy at West Point, NY. He was the first person to teach descriptive geometry in the U.S. and helped form the engineering curriculum. He later became head of the Engineering Department at West Point. He was there from 1816 until 1823.⁴⁶

Crozet moved from New York to Virginia. He was hired as the Principal Engineer of Virginia in 1823. His responsibilities included working and inspecting the Chesapeake and Ohio Canal and surveying roads and turnpikes including the Staunton to Petersburg Road. Crozet resigned his position in 1831 due to political controversy concerning the construction of the James River and Kanawha Canal. Around the late 1820s, Crozet was studying the feasibility of rail travel and suggested that it might be better than canals. However, canals were still the preferred mode of transportation advocated by many in Virginia.⁴⁷

In 1832, Crozet and his family left Virginia for Louisiana. He served as the State Engineer from 1832 until 1834. One of his duties was to survey the Clinton and Port Richmond Railroad. He left the state and returned to academia, where he was the president of Jefferson College and taught mathematics until 1836. His last year in Louisiana, he served as the Chief Engineer of New Orleans. This last position did not suit him, and he considered returning to France, but he was recalled to Virginia. During his time in Louisiana, He became more convinced of rail's reliability as a faster means to move both men and goods.⁴⁸

In 1837, Crozet returned to his old position as Chief Engineer of the state. His duties included a survey of the Louisa Railroad in 1839. He recommended that the railroad should cross the Blue Ridge Mountains at the Rockfish Gap. He also recommended a tunnel through the mountain to save time and effort crossing over the mountain. He also inspected the James River and Kanawha Canal. Crozet was appointed to the Board of Visitors of Virginia Military Institute (VMI) due to his position in the government. He became the first president of the board and served until 1845, which was two years after the legislature terminated his position as Chief Engineer. Crozet helped influence traditions, the uniform, and the educational curriculum at VMI.⁴⁹

Between 1845 and 1847, Crozet was the principal and a teacher of mathematics and engineering at Richmond Academy. The academy was located near the City of Richmond. He helped this school to continue in operation, but it closed soon after his tenure. In 1848, he published a mathematics textbook and was hired by Virginia to create a map of the state.⁵⁰

⁴⁶ Couper, 22-35; Hunter, 16-30; and *Richmond Dispatch, February 12, 1864, newspapers.com.*

⁴⁷ Couper, 36-66, 187-191; Hunter, 31-84; and Elizabeth O. Cullen, "Train Speeds and Safety in 1826 : As Expounded in the Early Writings of Claudius Crozet," *The Railway and Locomotive Historical Society Bulletin*, 7(1928), 41-46, accessed October 1, 2021, <http://www.jstor.org/stable/43504501>.

⁴⁸ Couper, 67-72; and Hunter, 85-102.

⁴⁹ Couper, 73-177; Hunter, 103-124; and *Richmond Dispatch, February 12, 1864, newspapers.com.*

⁵⁰ Couper, 118-126; and Hunter, 125-129.

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In 1849, the Virginia Legislature created the BRRC under the management of the Board of Public Works to build a section of railroad over the Blue Ridge Mountains which would be exclusively used by the Louisa Railroad (later the VCR). This BRRC would construct the rail using public funds. The VCR would receive ownership of the rail after repayment to the state for construction costs. The Board hired Crozet and decided to use his suggested 1839 plan for crossing the mountains. Crozet's 1849 survey suggested a series of three tunnels climbing the grade up the mountain on the eastern side; the entire project consisted of covering an area about 17 miles long.⁵¹

Construction of the BRR began in 1850 and lasted until 1859. The work at the BRT was the hardest and took the longest time to complete. Crozet dedicated himself to this work. He tried to save costs and pushed progress as much as possible. Dr. Gary Rogers describes him as "the person you would want to work for you, but you might not want to work for him." Crozet completed the tunnel construction. He left the completion of brick arching and some blasting, to his successor, Charles B. Fisk (1806-1866).⁵²

Crozet left the BRT and worked on the Washington aqueduct until 1859. His last active role as an engineer was working for the Virginia and Kentucky Railroad in 1860 until the Civil War interrupted the work. Crozet volunteered his services to the Confederate Government, but he was considered too old. Crozet lived the remainder of his life with his daughter and her family, near Richmond.⁵³

Crozet was buried in an unmarked grave in Shockoe Hill Cemetery in Richmond. He was laid next to his wife, son, and other daughter. His body was exhumed in 1942, moved, and reburied on the grounds of VMI as part of their centennial celebration. In 1949, a bronze plaque marked where he was originally buried in Richmond. At VMI, he was first interred in front of Preston Library. In 2010, he was moved to the grounds of Scott Shipp Hall, across from the 1935 mess hall named for Crozet on the north end of the campus. In 2020, Crozet was moved again because of construction work. He was moved about seven feet to the north of the earlier site.⁵⁴

⁵¹ Couper, 127-173; Hunter, 130-164; and Lyons, "Claudius Crozet," 19-21, 48-54, 406-430.

⁵² Couper, 127-173; Hunter, 150-164; Rogers, Phone Interview; and Lyons, "Claudius Crozet," 392-405.

⁵³ Couper, 174-184; and Hunter, 165-178.

⁵⁴ "Find-a-grave," ancestry.com; Couper, 181; Hunter, 178-181; *Richmond Times-Dispatch*, October 31, 1920, July 27, 1924, December 9, 1934, April 9, 1939, October 31, 1939, November 2, 1939, January 10, 1940, February 15, 1941, August 3, 1941, November 3, 1942, November 7, 1942, December 5, 1948, August 27, 1950, July 15, 1951, June 17, 1959, May 24, 1963, May 26, 1963, newspapers.com; *Daily News Leader*, April 16, 1940, December 7, 1948, October 31, 1974, October 18, 1997, October 25, 1997, January 30, 1999, October 17, 2003, October 17, 2004, newspapers.com; *Daily Press*, April 9, 1939, November 2, 1939, August 14, 1941, newspapers.com; *Richmond News Leader*, November 5, 1937; and Mary Price, "VMI Burial Site of Col. Claudius Crozet Shifts yet Again," Virginia Military Institute, accessed June 15, 2021, <https://www.vmi.edu/news/headlines/2019-2020/vmi-burial-site-of-col-claudius-crozet-shifts-yet-again.php>.

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Crozet was honored in 1876 when a depot community in Albemarle County was named for him. This community lies on the Chesapeake and Ohio Railroad near Mechum's River, where the BRR construction began on the eastern side of the Blue Ridge Mountains.⁵⁵

Irish Immigrants and African Americans

The BRT is associated with two ethnic groups: Irish immigrants and African Americans. The Irish who came to work in America to escape the extreme poverty and starvation in Ireland that worsened during the Potato Famine (1845-1855). Most of the African American laborers at the Blue Ridge Railroad (BRR) and the Blue Ridge Tunnel (BRT) were enslaved, both skilled and unskilled, who were hired-out by their masters. From some evidence, it is possible that some skilled free black men may have worked the BRR and BRT. Both ethnic groups contributed significantly, some with their lives, to the construction of the BRR. It was divided into sixteen sections, and each one was separately contracted. Each contractor assembled the work crew they preferred; there was no statement preferring either type of labor in the specifications. In places where dangerous work was to be done, such as drilling and blasting, the contractor assembled an Irish work crew. Hired enslaved workers were employed in less dangerous areas such as clearing and preparing the railbeds and laying rails. Some sections required skilled labor such as masons, smiths, and carpenters, and in those areas both Irish and black labor is noted. Contractors would have one type of labor in their crews and did not wish to mix them, but at times a mixing did occur due to the need for laborers.⁵⁶

Irish Immigrants

The Irish immigrants who came to the United States before and especially during the Potato Famine (1845-1855) came in search of a better way of life away from the suffering in Ireland. The British landowners did nothing because they viewed the native Irish as inferior, lazy, and violent. Many who came to America were the Catholics who had been marginalized by the Protestant British landowners, and after the blight struck they were virtually ignored. The problem was allowed to play itself out, and the result was the loss of a great amount of the Irish population in Ireland.⁵⁷

⁵⁵ *The Observer*, 13 December 1990, 16, October 1, 2021, newspapers.com.

⁵⁶ Throughout this section much information about both the Irish and the enslaved has been collected by Clann Mhor and Mary Lyons, some of the information was collected from the Blue Ridge Railroad Records in the archives of the Library of Virginia. The Clann Mhor information is available online. Lyons has published three books focusing attention on the Blue Ridge Tunnel and the Blue Ridge Railroad.

⁵⁷ "Historical Context: Irish Immigrants in the 19th Century - Re-Imagining Migration," Re-imagining Migration, February 8, 2019, <https://reimaginingmigration.org/historical-context-irish-immigrants-in-the-19th-century/>; Lori Henderson, "The Irish Famine: A Historiographical Review," accessed October 28, 2021, <https://www.eiu.edu/historia/Henderson.pdf>; "Irish Stereotypes - Stereotyping of the Irish Immigrant (PICTURES)," *Victoriana.com*, 2016, <http://www.victoriana.com/history/irish-political-cartoons.html>; Ryan Dearing, *The Filth of Progress: Immigrants, Americans, and the Building of Canals and Railroads in the West*, 1st ed. (University of California Press, 2016), <http://www.jstor.org/stable/10.1525/j.ctt196331g>; Kara Rota, "The Contribution of Irish Labor Following the Great Famine," *IrishCentral.com*, May 10, 2010, <https://www.irishcentral.com/roots/the-hands-that-built-america-93287044-237694541>; and Brattleboro Historical Society, "Arrival of the Railroad and the Irish,"

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Those who fled to America came at a time when industrialization projects in the North and South required cheap labor. There were large numbers of men available and eager to work. Some men were recruited to work gangs before they left Ireland. While they wanted to work, they were not perceived much differently by the Americans than by the British. Some compared them to little better than monkeys or apes, and in terms of people status, they were lower than the enslaved. A quote concerning the Irish was: "Let Negroes be servants and if not Negroes, let the Irish fill their place." The blacks were the first to refer to the Irish as "white niggers."⁵⁸

Many American businessmen feared an "alliance of the oppressed," between the Irish and African Americans. The businessmen strove to maintain a competitive mentality between the groups. The Irish were expendable and threatened with replacement by black labor when they would strike. Hired enslaved workers could be brought in immediately, and their work was considered better, they were more reliable and were cheaper than the Irish.⁵⁹

There was a work or starve mentality between blacks and Irish as well as between rival groups of Irishmen. The Irish rivalry was between three groups who hailed from three different areas of Ireland. Corkonians came from the province of Cork and southern Ireland; Ulstermen came from Northern Ireland, and Fardowners came from north central Ireland, and they usually joined ranks with the Ulstermen. The men from each area would closely bond with others from the same area and form small communities as work gangs. At the BRT, most of the men including their contractors were from Cork. These rivalries caused many conflicts along rail lines in both the North and South. One such incident occurred in the Staunton area when the Corkonians heard that a rival group of men from Connaught, referred to as Fardowners in newspapers, arrived in Fishersville to work on another rail line in the Shenandoah Valley. In February of 1850, approximately 230 men from the BRT marched to the John Porterfield farm where their rivals were being housed. The Corkonians wrecked general havoc on the site by scattering and trashing belongings, burning the building in which they were staying, and terrifying the women and children; the men were not there. No one was killed, but the local militia was called to stop the

Brattleboro Reformer, May 10, 2019, https://www.reformer.com/community-news/arrival-of-the-railroad-and-the-irish/article_6efa9628-5db6-5ed5-a00e-4903ac095a2c.html.

⁵⁸ Christopher Klein, "When America Despised the Irish: The 19th Century's Refugee Crisis," HISTORY, August 23, 2018, <https://www.history.com/news/when-america-despised-the-irish-the-19th-century-s-refugee-crisis>; Patrick McKenna, "When the Irish Became White: Immigrants in Mid-19th Century US | Generation Emigration," www.irishtimes.com, February 12, 2013, <https://www.irishtimes.com/blogs/generationemigration/2013/02/12/when-the-irish-became-white-immigrants-in-mid-19th-century-us/>; and Cherry Huang, "Occupational Patterns of the Irish Immigrants to New York," May 13, 2009, https://macaulay.cuny.edu/seminars/drabik09/article/o/c/c/Occupational_Patterns_of_the_Irish_Immigrants_to_New_York_70a7.html.

⁵⁹ "Blacks and Irish Immigrants: 1840 to 1860 - Black New York," Cuny.edu, 2021, https://macaulay.cuny.edu/seminars/henken08/articles/1/8/4/Blacks_and_Irish_immigrants%7E1840_to_1860_d007.html; Noel Ignatiev, "The Divide between Blacks and the Irish," The Root, March 17, 2010, <https://www.theroot.com/the-divide-between-blacks-and-the-irish-1790878916>; Patrick McKenna; Laurie L Dove, "When Irish Immigrants Weren't Considered 'White,'" HowStuffWorks, March 17, 2017, <https://history.howstuffworks.com/historical-events/when-irish-immigrants-werent-considered-white.htm>; Ryan Dearing; and Kara Rota.

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riot. By the time the militia arrived, the rioters were gone and were returning to the tunnel area. The militia caught up with them, arrested many, but only a very small number were positively identified for trial. The newspapers reported that the court proceeding became a joke when the Irish used their wits to downplay the event.⁶⁰

At the BRT, the Irish were housed at sites close to the tunnel construction on both sides. They resided in hastily built impermanent houses referred to as “shanties,” and the community was called a shanty town. Generally, the contractors erected these small houses in preparation for the crews. Sometimes the railroad companies built them. At the BRT, there is very little documentation on the builder, location, or the appearance of these houses. They were temporary and possibly constructed of whatever building materials were cheap and easy to obtain. The BRT shanties may have been wood with stone foundations. Architectural survey has found terracing where these may have stood. Typical shanties, studied at other railroad sites, were a one room house and measured about 14 x 10 ft. Once the project was finished the houses were abandoned, and these quickly disappeared due to neglect or by locals recycling the materials. The archaeological survey of the area suggested further study was needed at the BRT. The shanty towns were usually described as dirty, disordered, and repulsive. Many stated these living conditions were worse than those of the enslaved. They were unsanitary, and the Irish themselves were too poor to maintain personal cleanliness. Living in these shanties were many single men and families, sometimes multiple families in the same one room house. There are two known descriptions of the shanty towns at the BRT. One was from a teen traveler in 1851 who described it as “a great many Irish cabin on each side of the mountain, which reminded me of descriptions I have read of the manner of living of the lowest class in Ireland. They are mere hovels, and most of them have one or two barrels on top of the chimney, but in some of them, we saw muslin curtains...” Curran Spain described the site in his travelogue of 1852. He stayed overnight in what he referred to as “Tunnel House” near the

⁶⁰ Matthew E. Mason, “‘The Hands Here Are Disposed to Be Turbulent’: Unrest among the Irish Trackmen of the Baltimore and Ohio Railroad, 1829–1851,” *Labor History* 39, no. 3 (August 1998): 253–72, <https://doi.org/10.1080/00236679812331387409>; Ryan Dearing; Kara Rota; Laurie L Dove; Patrick McKenna; and Livia Gershon, “How Stereotypes of the Irish Evolved from ‘Criminals’ to Cops - HISTORY,” www.history.com, accessed October 28, 2021, <https://www.history.com/news/how-stereotypes-of-the-irish-evolved-from-criminals-to-cops>; “Excerpt from ‘Riots on Railways,’ Published in the Irish American on February 21, 1852, *Exploring Diversity in Pennsylvania History: Working on the Rails*, accessed September 19, 2021, https://hsp.org/sites/default/files/railroadriot_revised.pdf; Kevin Donleavy, “Fardowners,” clannmhor.org, accessed November 1, 2021, <http://clannmhor.org/clannmhor/Fardowners.html>; Kevin Donleavy, “History, Heritage, Folklore, and News from County Sligo, Ireland,” www.sligoheritage.com, 2005, <https://www.sligoheritage.com/ArchVirginiaFardowners.htm>; *Staunton Republican Vindicator*, February 18, 1850, newspapers.com; *Staunton Spectator*, February 12, 1850, February 13, 1850, February 20, 1850, viriniachronicle.com; *Daily Richmond Times*, February 15, 1850, viriniachronicle.com; *Lynchburg Virginian*, February 18, 1850, viriniachronicle.com; *Baltimore Sun*, February 16, 1850, February 20, 1850, newspapers.com; *Cincinnati Enquirer*, February 26, 1850, newspapers.com; *Daily Evening Transcripts*, February 19, 1850, newspapers.com; *Evening Post*, February 15, 1850, newspapers.com; *New Orleans Weekly Delta*, February 25, 1850, newspapers.com; Joseph Addison Waddell, *Annals of Augusta County, Virginia*. (Richmond, 1902), 442, books.google.com; Dooley 142, 146-147; Couper, 132; Coleman, 109-110; *Daily News Leader*, April 30, 1970; January 21, 1973, October 31, 1974, May 17, 1994, newspapers.com; Hansen, 40–41; John Hyche, “Phase I Archaeological Investigations of the Pollak Vineyards Outbuildings Albemarle County Greenwood, Virginia FINAL REPORT,” May 2018; and Lyons, *Blue Ridge Railroad*, 43-43; and Lyons, *Blue Ridge Tunnel*, 27-29.

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mouth of tunnel on the western side. During the night he stated that the blasting of the rock within the tunnel startled them from their sleep. The next morning, they traveled to the eastern side of the mountain and “passed a group of Irish shanties that sent out a perfume equaled nowhere except in the suburbs of Cincinnati-or perhaps ‘Sweet Erin’ itself.” He further described their filthiness and the poor appearance of the inhabitants.⁶¹

The unsanitary housing conditions, the lack of personal cleanliness, and a diet of food that was likely to be stale and rotten, left the Irish susceptible to various common diseases of the period. The Clann Mhor “Master List” notes that they were affected by tuberculosis, typhus, and pneumonia. They also suffered from an outbreak of cholera. This epidemic occurred in late July through August of 1854 and resulted in the loss of 42 men, women, and children. The outbreak began on the eastern side of the tunnel, and it is unknown where the infection really started. It was part of series of outbreaks that occurred throughout the country in the nineteenth century. Newspapers of the era report on cases throughout the country, and one can follow an outbreak in 1853 from Richmond to Scottsville; the assumption was that the disease followed the James upriver. Many of newspapers hinted that the tunnel outbreak came from an infected individual who visited Scottsville. The cholera is caused by a bacterium in feces which contaminates food and water. Once it was discovered at the tunnel, the overseer withdrew the enslaved from their positions on the eastern side of the tunnel. They were never affected by it. It quickly spread to the western side, and general panic ensued. Many Irish fled the site, and work on the tunnel was suspended until the disease subsided in early September. An update appeared in the newspapers, Crozet mentioned the outbreak and emphasized that work had resumed. In 1855, there was the scare of another outbreak until the problem was diagnosed as cholera morbus, a noncontagious illness that affects mostly children.⁶²

⁶¹Ryan Dearing: Matthew E. Mason; Kara Rota; Rivanna Archaeological Services, LLC, *Phase I Archaeological Survey of the Blue Ridge Tunnel Greenway Project* (Chesapeake, VA: Woolpert Inc, 2020), 75-85; John Hyche; Dan Burkes, Afton Shanty Slides, email to author, May 2021; Brattleboro Historical Society; “Irish Slaves Built the Erie Canal,” Blogspot.com, November 12, 2019, <https://rememberingtherepublic.blogspot.com/2013/11/irish-slaves-built-erie-canal.html>; Lyons, *Blue Ridge Railroad*, 38, 41, 43, 62, 89, 111; Lyons, *Blue Ridge Tunnel*, 26, 79; and “First Hand Accounts,” Clann Mhor, accessed August 2, 2021, http://www.clannmhor.org/clannmhor/First_Hand_Accounts.html.

⁶² Kara Rota; Brattleboro Historical Society; Patrick McKenna, “When the Irish Became White: Immigrants in Mid-19th Century US | Generation Emigration,” www.irishtimes.com, February 12, “Joining the Workforce | Irish | Immigration and Relocation in U.S. History | Classroom Materials at the Library of Congress | Library of Congress,” Library of Congress, Washington, D.C. 20540 USA, accessed October 19, 2021, <https://www.loc.gov/classroom-materials/immigration/irish/joining-the-workforce>; *Richmond Dispatch*, June 19, 1854, June 28, 1854, August 10, 1854, newspapers.com; *Richmond Enquirer*, June 19, 1854, newspapers.com; *Alexandria Gazette*, July 13, 1854, July 25, 1854, virginiachronicle.com; *Lynchburg Daily Virginian*, July 12, 1854, July 15, 1854, virginiachronicle.com; *Cooper’s Clarksburg*, July 12, 1854, virginiachronicle.com; *Staunton Spectator*, August 2, 1854, virginiachronicle.com; *Richmond Enquirer*, July 25, 1854, virginiachronicle.com; *Daily Dispatch*, August 15, 1854, August 18, 1854, virginiachronicle.com; “Cholera,” Clann Mhor, accessed October 19, 2021, <http://www.clannmhor.org/clannmhor/Cholera.html>; “Master List,” Clann Mhor, accessed October 19, 2021, <http://www.clannmhor.org/clannmhor/MasterList.html>; Dooley, 91 156-157; Lyons, *Claudius Crozet*, 302-306, 309-310; Lyons, *Slaves*, 73-76; Lyons, *Blue Ridge Railroad*, 13, 88, 93, 97, 104, 107; and Lyons, *Blue Ridge Tunnel*, 57-59.

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The life and work at the tunnel were hard and dangerous. When tunnel construction began there was only one shift of men working on either side of the tunnel at the cuts initially. They focused their work on the header, so they could get to the site of the tunnel heading as soon as possible. Soon, shifts were increased to two working 24 hours per day with more manpower hired. By 1853, the work had increased to three shifts in a 24 hour period. A full complement of workers meant about 30 men on each shift. At the height of construction this meant there were approximately 180 men living at the tunnel, 90 on each side, not including their families. There were likely more than the just the 180 workmen at the tunnel because contractors liked to keep a surplus of laborers.⁶³

Maintaining a full complement of workers was difficult. News of higher wages at another site could cause a strike or loss of manpower. Sometimes men worked at a site seasonally. At the BRT, there was a worker shortage from late 1852 until about the end of 1853 due to a lull in the arrival of new immigrants, and there was competition from the construction of the temporary Mountain Top Track. Strikes occurred periodically along the entire BRR; the worst strike at the BRT occurred in April of 1853. It lasted about three weeks and threatened progress at the tunnel to the extent that Crozet was given permission to call in the military. Crozet blamed this strike on a fired machinist named Paul Stevens (b. ca. 1806) who was accused of sending a letter stating that that workers in Cincinnati were paid a daily wage considerably higher than at the tunnel. This letter caused 60 men to immediately leave the tunnel. Others went on strike, and work on the tunnel was suspended. Negotiations between the workers, with assistance from Father Downey, Crozet, and the contractors, Kelly and Larguey, took a long time. Crozet grew impatient, called the Irish lazy and undependable, and advertised for new laborers without receiving any response from his ads. He began to consider bringing in hired enslaved labor to work for the interim until the strike was resolved and to contemplate hiring enslaved labor for the next year. Finally an agreement was reached, but tunnel work could not immediately resume until water was pumped from the tunnel. By August, Crozet stated he had a full complement of workers, but he lacked a surplus.⁶⁴

Drilling and blasting were the most dangerous jobs at the tunnel, and accidents were part of the job. Irishmen were expendable, and there were always others to take their place. When an accident or death happened, they stopped work, mourned, then returned to work. In an 1857 newspaper article, Crozet bragged that only two serious accidents had occurred during the construction of the tunnel. The results were only two men killed and another injured. Yet, Crozet mentions in a letter to the BPW that a collapse on the west side of the tunnel took place and injuries resulted. Clann Mhor collected information about other accidents at the BRT from the BRRC payroll records, death and cemetery records, and newspapers. One unusual incident that Crozet mentioned in a report and was carried in many newspapers involved two preteen boys: one Irish and one black.

The Irish boy wanted to demonstrate how a train of black powder was laid and fired. He was not careful about the placement of the powder, which was near the place where 60 barrels of powder

⁶³ Lyons, *Claudius Crozet*, 95, 161, 200-202, 209-211, 422.

⁶⁴ Lyons, *Claudius Crozet*, 199-204, 209-212, 215, 223., 225, 233-238; Coleman, 81; Dooley, 146, 154-165.

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was stored. His demonstration caused an explosion which immediately killed the Irish boy; the black boy died a few hours later, and only 13 barrels of powder remained.⁶⁵

The Irish that worked at the tunnel left little documentation. Some stayed in the area after work was completed, and others moved to another project. Lyons touches on some of the Irish associated with the tunnel construction, but there are three notable Irishmen to highlight. Two men were the contractors who supervised the work at the tunnel, John Kelly (1812-1887) and John Larguey (1813-1858). The other was their spiritual leader, Father Daniel Downey (1803-1874). Kelly and Larguey came to America before the famine from County Cork. They were experienced with railroad construction and had worked at the Baltimore and Ohio line before coming to the tunnel. They were partners at the tunnel, but Kelly was the main contractor of the other BRR tunnels (Greenwood and Brooksville) and Kelly's cut. John Larguey died suddenly soon after construction of the tunnel was complete and his death was reported in several papers. John Kelly became a contractor on the line to Covington, and he retired in 1862. He became the proprietor for the Sweet Chalybeate Springs spa and was the postmaster until his death in 1887. Following the completion of the tunnel, it seems there were payments still due to the contractors from the state, and the case was in court from 1873 until 1884.⁶⁶

Father Daniel Downey was a Catholic priest who was assigned to Staunton, and his mission area included the tunnel. He tended to the Irish and their needs during their residency at the tunnel. He

⁶⁵ "Master List," Clann Mhor; Lyons, Claudius Crozet, 81, 234, 245, 260, 288-89,296-298; Lyons, Blue Ridge Railroad, 52, 89, 99; *Richmond Enquirer*, May 21, 1850, virginiachronicle.com; *Staunton Spectator*, May 21, 1850; June 19, 1850, March 5, 1851, March 11, 1857, virginiachronicle.com; *Republican Vindicator*, May 20, 1850, virginiachronicle.com; *Daily Dispatch*, August 18, 1854, July 5, 1858, virginiachronicle.com; *Alexandria Gazette*, August 20, 1851, December 31, 1857; virginiachronicle.com; *Richmond Dispatch*, February 2, 1855, virginiachronicle.com; *Daily Richmond Times*, May 15, 1850, virginiachronicle.com; *Brooklyn Daily Eagle*, May 14, 1850, newspapers.com; *Charleston Courier*, May 14, 1850, newspapers.com; *The Evening Post*, May 13, 1850, newspapers.com; *Weekly Commercial*, May 17, 1850, newspapers.com; *Times-Picayune*, May 21, 1850, newspapers.com; *The Tennessean*, May 21, 1850, newspapers.com; *Poughkeepsie Journal*, May 18, 1850, newspapers.com; *The North-Carolina Star*, May 22, 1850, newspapers.com; *Gettysburg Compiler*, May 20, 1850, newspapers.com; and *Alton Telegraph & Democratic Review*, May 24, 1850, newspapers.com.

⁶⁶ Kelly and Larguey were not the original contractors for the tunnel. John Rutter was the original contractor and he was unable to meet contractual obligations and Crozet re-let the tunnel contract. The first contract was written for a three way partnership that included a man named Christian Detmold who was a silent partner and he is not mentioned in later contracts for the tunnel. Couper, 131-133, 168-170; Coleman, 62; Warden, 50; Dooley, 143-144; Hansen, 40-41; Lyons, *Claudius Crozet*, 71-72, 209, 364, 420-423; Lyons, *Blue Ridge Railroad*, 23 36-41, 45-46; Lyons, *Slave*, 123-125; *Alexandria Gazette*, October 18, 1849, February 5, 1880, virginiachronicle.com; *Richmond Enquirer*, July 31, 1849, December 21, 1849, newspapers.com; *Brownlow's Knoxville Whig*, February 16, 1850; newspapers.com; 1850-1880 U.S. Federal Census Records, ancestry.com; Find-a-Grave, ancestry.com; "John Kelly," Clann Mhor, accessed October 19, 2021, http://www.clannmhor.org/clannmhor/John_Kelly.html, "John Larguey," Clann Mhor, accessed October 19, 2021, <http://www.clannmhor.org/clannmhor/JohnLarguey.html>; *Alexandria Gazette*, July 13, 1858, newspapers.com; *Richmond Dispatch*, July 5, 1858, January 29, 1874, March 13, 1874, November 21, 1874, March 10, 1875, February 5, 1880, virginiachronicle.com; *Staunton Spectator*, July 13, 1887, virginiachronicle.com; *Valley Virginian*, June 23, 1887, April 28, 1887, July 7, 1887, virginiachronicle.com; *Daily State Journal*, April 4, 1873, newspapers.com; *Staunton Vindicator*, April 4, 1873, August 28, 1874, March 12, 1875, February 6, 1880, virginiachronicle.com; *Staunton Spectator*, April 15, 1873, newspapers.com; *Daily Dispatch, Norfolk Virginian*, March 10, 1875, January 28, 1878, newspapers.com; and *Alexandria Gazette*, February 5, 1880, newspapers.com.

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celebrated the many marriages and births and was there to help during the strikes, sicknesses and deaths. He came to America in the 1840s and had a heart for his fellow Irishmen. He was described as an “active, energetic missionary.” He was first assigned to Lynchburg where many Irish worked on the James River and Kanawha Canal. He grew the congregation of Lynchburg who first met in an old Baptist church near Fifth Street. Between 1842 and 1843, the congregation acquired land and built their own church on Church Street. During his tenure in Lynchburg he was required to travel to Lexington and Staunton. In 1845, he was assigned to Staunton and had a church in that city by 1851. This was the same year a plank chapel was erected near the top of Afton Mountain for the BRT workers. The chapel burned in 1857.⁶⁷

Downey had a life altering incident the same year the chapel burned. Near Christmas of 1857, an Irish stonemason named William Mullen was found shot and dead outside Father Downey’s residence. This story involved Mullen and Downey’s Irish maid who was pregnant, and whom Mullen had promised to marry. Mullen and Downey got into a heated discussion. Downey shot Mullen and dragged him outside the house. The entire story has many twists and turns according to the newspaper reports. Downey was brought to not one, but four trials between 1858 and 1859 before he was ultimately acquitted. He was laicized by the Catholic Church, and he became a teacher and later a shopkeeper in Staunton. He died in 1874, and he was buried near some of the tunnel workers at Thornrose Cemetery.⁶⁸

⁶⁷ 1850-1870 U.S. Federal Census, ancestry.com; F. Joseph Magri, *The Catholic Church in the City and Diocese of Richmond* (La Crosse, Wisc.: Brookhaven Press, 1906), 65; Gerald P. Fogarty, *Commonwealth Catholicism: A History of the Catholic Church in Virginia*, (University of Notre Dame Press, 2001), 80–98, 119–63, <https://www.jstor.org/stable/j.ctvpj7c01.10>; Part 3: Early History,” Lynchburg Museum System, accessed August 19, 2021, <https://lynchburgmuseum.org/roman-catholicism-part-3>; William Asbury Christian, *Lynchburg and Its People* (Lynchburg J. P. Bell Company, 1900), 132, 324, books.google.com; “History of St. Francis of Assisi Parish: Part 2: The Founding of St. Francis, 1845,” stfrancisparish.org, accessed August 2, 2021, <https://stfrancisparish.org/hist2.html>; Joseph Addison Waddell, *Annals of Augusta County, Virginia*. (Richmond, 1902), 447–48, books.google.com; “Part 2: The Founding of St. Francis, 1845,” St. Francis of Assisi Catholic Parish, Staunton, Virginia, accessed July 3, 2021, <https://stfrancisparish.org/hist2.html>; Phil James, “Secrets of the Blue Ridge: Mountain Top: Standing in the Gap | Crozet Gazette,” Crozet Gazette, May 9, 2021, <https://www.crozetgazette.com/2021/05/09/secrets-of-the-blue-ridge-mountain-top-standing-in-the-gap/>; John Lewis Peyton, *History of Augusta County, Virginia*, Google Books (1882; repr., Genealogical Publishing Com, 2009), 90–91, https://www.google.com/books/edition/History_of_Augusta_County_Virginia/ILfbiFFqDXoC?hl=en&gbpv=0; William Couper, *History of the Shenandoah Valley*. (New York, Lewis Historical Pub. Co, 1952), 85; Coleman, 80; Lyons, *Blue Ridge Railroad*, 72-73; and *Richmond Dispatch*, August 5, 1854, April 21, 1857, newspapers.com.

⁶⁸ U.S. Treasury Register 1874, 186, ancestry.com; Persons Employed December 10 1873, ancestry.com; Find-a-grave, ancestry.com; “Valley of the Shadow: Civil War Era Newspapers,” Library of Virginia, n.d., <https://valley.lib.virginia.edu/news.ss1859/va.au.ss1859.09.20.xml>; Robert Reid Howison, *Reports of Criminal Trials in the Circuit, State and United States Courts, Held in Richmond, Virginia* (Buffalo, Ny: Dennis, 1950), 67, books.google.com; *Daily Dispatch*, September 11, 1874, virginiachronicle.com; *Virginia Free Press*, September 19, 1874, virginiachronicle.com; *Richmond Dispatch*, June 24, 1858, January 12, 1858, June 22, 1858, November 8, 1858, February 18, 1859, February 19, 1859, May 13, 1859, May 14, 1859, September 11, 1874, newspapers.com *Richmond Enquirer*, December 18, 1857, June 25, 1858, February 15, 1859, February 18, 1859, March 1, 1859, May 14, 1859, newspapers.com; *Staunton Spectator*, December 26, 1871, August 5, 1873, newspapers.com; and *Alexandria Gazette*, December 15, 1857, June 17, 1858, June 21, 1858, February 14, 1858, September 27, 1859, September 10, 1874, newspapers.com.

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The industrialization of the South during the antebellum period included the construction of public works projects such as canals and railroads. Factories, mills, mining and quarrying were also part industrialization and the move away from strict agrarianism. The upper South shifted its major agricultural crops from labor intensive products such as tobacco to less labor intensive, such as wheat. This change led to a surplus of enslaved hands. The solutions to this problem were to either sell the surplus laborers or hire them out to work in factories or on public works projects.

The hiring-out of enslaved labor became a business. Traditionally, the hiring took place in December with contracts struck between the owner and employer. The enslaved themselves had little or no say in these deals. The contracts made between the parties usually specified the length of the hire, and the owner's right to recall if the enslaved worker was needed. The employer had to provide housing, food, and clothing, and sometimes medical care. In the case of the BRT, owners specified that their people were not to work in the dangerous areas around the drilling or blasting. The BRRC insured the life of the enslaved worker and would pay the owner for the loss should the enslaved worker be injured or die. Enslaved labor was perceived to be more reliable, and they could be worked longer than free labor. Enslaved workers were used, at times, to replace the Irish who were on strike.⁶⁹

The cost of enslaved labor might appear to be more costly than the Irish labor. The Irish were paid a day wage, and they were responsible for their own care and housing. Hired enslaved labor required the employer to pay for housing, food, clothing, and medical care. Hired enslaved workers also required an overseer for the group whose costs would be shared between the cost of each enslaved worker. Skilled enslaved workers also obtained a higher wage than a regular worker. There have been studies comparing the labor at other work sites of the period. The best comparison, at the BRR, is made with rates that are cited in 1852. Like other studies, enslaved labor was cheaper despite the extra requirements. In 1852, using the prices cited in a letter to Crozet and calculating for a year, the enslaved worker would cost \$187.40, not including the price of an overseer, and the Irishman would cost \$232.50.⁷⁰

The Blue Ridge Railroad construction utilized many enslaved workers. They cleared the ground, created railbeds and laid rail. In his letters, Crozet states they were used for ballasting and

⁶⁹ David T. Gleeson, *The Irish in the South, 1815-1877* (Chapel Hill, N.C.: University Of North Carolina Press, 2001), 39-54, <https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=74299&site=ehost-live&scope=site>; Marrs, 55-83; Robert S. Starobin, "The Economics of Industrial Slavery in the Old South," *The Business History Review* 44, no. 2 (1970): 140-141, <https://doi.org/10.2307/3112351>; and Susanna Delfino and Michelle Gillespie, "Global Perspectives on Industrial Transformation in the American South. New Currents in the History of Southern Economy and Society." (University of Missouri Press, 2005), 80, <https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=145577&site=ehost-live&scope=site>.

⁷⁰ Among John W. Walker's known crew of brickmakers, in 1850, there were six men living in with him who are listed as brick masons (ages 16-25) and a free black man named Nicholas Poindexter (1830-bef. 1886). Poindexter later moved to Culpeper and in 1880 he was working in Washington, D.C. as a shoemaker. Walker may have used hired enslaved workers, but no business records were found to verify this information. Lyons, *Claudius Crozet* 258-259; Lyons, *Slave*, 88; 1850 US Federal Census Record, ancestry.com; 1850 US Federal Census-Slave Schedule, ancestry.com; 1860 US Federal Census, ancestry.com; and 1860 US Federal-Slave Census, ancestry.com.

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trimming. Skilled enslaved workers such as blacksmiths and masons were also employed, and there are some indications that free blacks may have worked along the line. There are two masons who may have been associated with the railroad. Nicholas Poindexter (1830-c.1886) and Lewis Harvey (b.1810). There is very little documentation on these men, but they are known to have worked for the men who were major contractors on the BRR during the construction period.⁷¹

It was during 1854 that the majority of the hired enslaved labor was employed. Those employed at the tunnel were hired in response to the trouble that was caused by the Irish strike of 1853 and due to a shortage of workers caused by competition for labor to work on the Mountain Top Track. Crozet wanted more labor, but he was only able to obtain a total of 31 men who were restricted from dangerous areas and dangerous work. In the payroll records compiled by Mary Lyons and Clann Mhor, one finds that most of the enslaved worked on eastern or safer side of the tunnel, and most of the men were designated as floorers. These men were generally involved in removing debris and other assignments that were not around the drilling and the blasting. Four men were listed as blacksmiths and were paid the higher wages of skilled labor. One of the four also worked for a period as a floorer according to the records. The contracts for the men varied, and not all worked the entire year. A few were employed at other times, likely when needed. The 27 floorers were comprised of six men who worked the entire year, ten men who worked 11 months, three men who worked 10 months, one man who worked 2 months, six men who worked a month, and one who worked the entire year and an additional 3 months in 1855. The four blacksmiths included one man who worked only a month, one was a floorer for an unknown time, but was employed until 1856, and the remaining two men worked various times through 1856 as well. The housing for these men is unknown. It is possible they may have been housed at a local plantation near the tunnel, because when cholera was discovered, the overseer removed them from the tunnel vicinity. Crozet himself notes that none of the enslaved were touched by the cholera.⁷²

Like the Irish, there is little documentation about the work at the tunnel from their perspective. There are some reports that describe accidents involving enslaved labor. One noted accident occurred in April 1854. This accident occurred along the western railroad section, and it involved two hired enslaved workers named Thomas and Jerry.⁷³ The BRT, after an investigation, paid the owners for these men. There is a biography of one man who worked as a cart boy at the tunnel in

⁷¹ 1850-1880 U.S. Federal Census Records, ancestry.com; Maris-Wolf, 181; Lyons, *Virginia Blue Ridge Railroad*, 29; Michelle Miller, Harvey family researcher, emails to author dated September 3-5, 2021.

⁷² Clann Mhor, "MasterList;" Lyons, *Slave*, 127-138; Lyons, *Blue Ridge Tunnel*, 169-175; and Lyons, Claudius Crozet, 199-225, 316; William G. Thomas, *The Iron Way: Railroads, the Civil War, and the Making of Modern America*, (Yale University Press, 2011), 17-36, <https://www.jstor.org/stable/j.ctt5vm0ks>; and Gleeson.

⁷³ In Lyons's *The Virginia Blue Ridge Railroad*, p. 86, the accident is described as follows: "the foreman responsible for [the workers'] safety was eating breakfast. He failed to notice that the departing train was headed back down the western slope with the flatcars ahead of the locomotive. When the cars hit a curve, they detached from the engine and rolled down the tracks, unchecked . . . a handcar, unseen, was sitting around a curve. The flatcars collided with it, killing Jerry and Thomas."

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1853. "Uncle" Jim Williams (1840-1943) was a hired enslaved worker who hauled blast debris from the tunnel and described the act of being hired-out as being "leased like a horse."⁷⁴

Williams was born in a field on the Jarman plantation in Albemarle County. He claimed he never knew his father. He was hired out at different times before the Civil War. He first worked at the tunnel and was later hired to work at the Mudwall Tavern in Charlottesville. This position, he claims, opened his eyes to his second-class status in society. During the war, he was sent to construct breastworks in Richmond, and later, he drove a forage wagon for the Confederate cavalry and artillery. He also preached. He referred to himself as a chairback preacher who used the back of a chair for a pulpit.⁷⁵

In 1865, he was taken to the gate of the farm, and William Jarman told him he was free. He says that he left the plantation, traveled over the mountains, and never returned. He first worked as a laborer at the Mt. Torry Furnace, and when able, he bought himself a farm. He settled in the area between Crimora and Doods in Augusta County. He lived on that farm for the rest of his life.⁷⁶

Williams was a local legend. Beginning with his 100th birthday, newspapers recorded his life and continued updates yearly until his death. The interviews described the history he had witnessed and the events of his life. Ellen Kay Sandridge (1906-1981) befriended Williams, and she wrote a song about his life. Sandridge, a local songwriter, got Williams' approval for the song, and it was published after his death.⁷⁷

Brief Chronology of the Tunnel

- 1849** -BRRC created by the Virginia Legislature to build a 17 mile section or railroad over the Blue Ridge Mountains.
-Crozet is chosen as Chief Engineer.
-Crozet surveys and creates specifications for the project and begins letting contracts for the 16 sections of the project.
- 1850** -Contract for the BRT re-let to John Kelley and Co.
-Louisa Railroad Co. is renamed Virginia Central Railroad Co., this is the company who will have sole use of the track built by BRRC.
-Western header of BRT opened in August.

⁷⁴ U.S. Federal Census Records 1880-1930, ancestry.com; Lyons, Claudius Crozet, 288-290, 314-315; Lyons, Slaves, 45-50, 79-91, 95-101, 106-107, 111-114, 121-122.

⁷⁵ Dale M. Brumfield, "Waynesboro Ex-slave Uncle Jim Williams Lived to 102," *News Leader*, September 26, 2018, newsleader.com; *Richmond Times-Dispatch*, August 29, 1940, August 30, 1942, September 8, 1942, newspapers.com; *Daily Press*, August 29, 1940, newspapers.com; *Daily News Leader*, August 29, 1940, August 29, 1942, October 30, 1942, February 20, 1943, newspapers.com and virginiachronicle.com; Lyons, *Slave Labor*, p. 46, endnote 49.

⁷⁶ Ibid.

⁷⁷ Dale M. Brumfield, "Crimora Woman was Local Musical 'Hot Shot'," *News Leader*, November 30, 2018, newsleader.com; *Daily News Leader*, October 29, 1944, newspapers.com.

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- 1851** -Eastern header of BRT opened in January.(In an earlier article the date of September 1850 is mentioned for opening the eastern header.
- 1852** -Double shifts on both sides of tunnel begins. Working 24 hrs. a day.
- 1853** -Three shifts on both sides of the tunnel began.
-Labor strike took place in April, it lasted for about 3 weeks.
- 1853-1854** -Mountain Top Track, the temporary rail constructed over the gap by VCR under supervision of their Chief Engineer, Charles Ellet, Jr.
- 1854** -An outbreak of cholera took place in July through August.
-Greenwood Tunnel opens.
- 1856** -Brooksville Tunnel opens.
-Headers in the interior of tunnel on December 29.
- 1857** -Tunnel construction largely completed; rails left to be laid.
-Crozet leaves the BRRC as engineer.
- 1858** -Charles Fisk becomes BRRC Chief Engineer.
-Tunnel opens for regular use in April.
- 1858-1862** -Regular rail use by the VCR
- 1859** -Final tasks on tunnel's construction are completed
- 1862** -Gen. Thomas J. "Stonewall" Jackson used the railroad during the Valley Campaign.
- 1865** -Union troops tear up railroad.
-VCR restores operation to line in July.
- 1865-1944** -Regular rail operation.
- 1868** -Virginia Central Railroad merges with the Covington and Ohio to form the Chesapeake and Ohio Railroad.
- 1878** -The Chesapeake and Ohio Railroad is reorganized to for the Chesapeake and Ohio Railway.
- 1889** -Tunnel scaled and widened by the railroad to accommodate vestibule trains.
- 1912** -Tunnel scaled and widened by the railroad to accommodate H8 locomotives.
- 1941-1947** -Tunnel is used by Dr. Robert Sumpter Griffiths to attend to patients who are rail workers and patients who lived on both sides of the tunnel.
- 1942-1944** -New tunnel is constructed beside original tunnel.
- 1944** -Original tunnel is abandoned by the Chesapeake and Ohio Railway.

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-Some consideration given about reuse of the tunnel as cold storage, nothing attempted.

1953 -Bottled Gas of Virginia attempted to install walls within the interior of the tunnel to create storage for liquid propane. Idea was soon abandoned because walls too difficult to seal against the rock.

About 1953-2001 -Tunnel abandoned and not maintained.

1971 -Tunnel surveyed for the Historic American Engineering Record (HAER)

1976 -American Society of Civil Engineers designates the site a National Historic Civil Engineering Landmark.

1987 -The Chesapeake and Ohio Railway after mergers of many railroads during the 20th century becomes part of CSX Corp.

2001 -Nelson County considers reuse of tunnel for recreational use by the public.

2006 -A feasibility study of the tunnel for its reuse was conducted.

2007 -Nelson County acquired the tunnel from CSX Corp.

2014 -The beginning of a three phase restoration and rehabilitation for use of the tunnel by the public.

2014-2015 -Phase 1 of project-eastern trail.

2016-2020 -Phase 2 of project-tunnel restoration and rehabilitation.

2018-2020 -Phase 3 of project-western trail.

2020 -Project completed.
-Tunnel dedicated in September.
-Tunnel opens to public in November.

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Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested
 previously listed in the National Register
 previously determined eligible by the National Register
 designated a National Historic Landmark
 recorded by Historic American Buildings Survey # _____
 recorded by Historic American Engineering Record # VA-2
 recorded by Historic American Landscape Survey # _____

Primary location of additional data:

- State Historic Preservation Office
 Other State agency

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- Federal agency
 Local government
 University
 Other

Name of repository: Virginia Department of Historic Resources, Richmond; and
Library of Virginia, Richmond; Library of Congress, Washington, D.C.; Nelson County,
Virginia;

Historic Resources Survey Number (if assigned): VDHR # 062-5105, VDHR# 002-5075-
0564

10. Geographical Data

Acreage of Property 1.57

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates

Datum if other than WGS84: _____

(enter coordinates to 6 decimal places)

- | | |
|------------------------|-----------------------|
| 1. Latitude: 38.039400 | Longitude: -78.862360 |
| 2. Latitude: 38.036790 | Longitude: -78.859730 |
| 3. Latitude: 38.035430 | Longitude: -78.858310 |
| 4. Latitude: 38.035130 | Longitude: -78.858000 |
| 5. Latitude: 38.033830 | Longitude: -78.856650 |
| 6. Latitude: 38.032870 | Longitude: -78.855670 |
| 7. Latitude: 38.032870 | Longitude: -78.855680 |
| 8. Latitude: 38.032360 | Longitude: -78.855150 |
| 9. Latitude: 38.030310 | Longitude: -78.852980 |

Or

UTM References

Datum (indicated on USGS map):

NAD 1927 or NAD 1983

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- | | | |
|----------|-----------|-----------|
| 1. Zone: | Easting: | Northing: |
| 2. Zone: | Easting: | Northing: |
| 3. Zone: | Easting: | Northing: |
| 4. Zone: | Easting : | Northing: |

Verbal Boundary Description (Describe the boundaries of the property.)

The historic boundary is coterminous with the 4,279-foot length, 16-foot width, and 69.2-foot downward eastern slope of the Blue Ridge Tunnel from the exterior edge of its western portal to the exterior edge of its eastern portal. The historic boundary extends to either side of the tunnel's centerline. No buffer zone is within the historic boundary. The true and correct historic boundary is shown on the attached Location Map.

Boundary Justification (Explain why the boundaries were selected.)

The historic boundary is drawn to include the tunnel itself as it extends underground from the exterior edge of the eastern portal to the exterior wedge of the western portal and thereby encompasses the entirety of the historic property. Adjacent lands are not within the boundary, nor the walking trail sections that extend beyond the tunnel's two portals as they are not associated with the tunnel's significance. All known associated historic resources are encompassed within the boundary.

11. Form Prepared By

name/title: Sandra F. Esposito
organization: _____
street & number: 140 Cradon Hill Ln
city or town: Amherst state: VA zip code: 24521
e-mail sandiesposito@icloud.com
telephone: (540)529-0205
date: August 2022

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.

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- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)

Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered, and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Name of Property: **Blue Ridge Tunnel**

City or Vicinity: **Afton**

County: **Nelson**

State: **VA**

Photographer: **Sandra F. Esposito**

Date Photographed: **July 14, 2021**

Description of Photograph(s) and number, include description of view indicating direction of camera:

1 of 31: VA_NelsonCounty_BlueRidgeTunnel_0001

View: East Portal facing W

2 of 31: VA_NelsonCounty_BlueRidgeTunnel_0002

View: Closeup East Portal facing W

3 of 31: VA_NelsonCounty_BlueRidgeTunnel_0003

View: Brick Arch on East Side facing NW

4 of 31: VA_NelsonCounty_BlueRidgeTunnel_0004

View: Brick Arch on East Side facing SW

5 of 31: VA_NelsonCounty_BlueRidgeTunnel_0005

View: Interior Tunnel Rock Wall facing NW

6 of 31: VA_NelsonCounty_BlueRidgeTunnel_0006

View: Interior Tunnel Rock Wall facing NW

7 of 31: VA_NelsonCounty_BlueRidgeTunnel_0007

View: Interior Tunnel Rock Roof facing W

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8 of 31: VA_NelsonCounty_BlueRidgeTunnel_0008
View: Interior Tunnel Rock Roof facing W

9 of 31: VA_NelsonCounty_BlueRidgeTunnel_0009
View: Interior Tunnel Repair facing W

10 of 31: VA_NelsonCounty_BlueRidgeTunnel_0010
View: Interior Tunnel Roof Repair facing N

11 of 31: VA_NelsonCounty_BlueRidgeTunnel_0011
View: Interior Tunnel Concrete Repair facing N

12 of 31: VA_NelsonCounty_BlueRidgeTunnel_0012
View: Interior Tunnel Concrete Repair facing S

13 of 31: VA_NelsonCounty_BlueRidgeTunnel_0013
View: Interior Spring facing N

14 of 31: VA_NelsonCounty_BlueRidgeTunnel_0014
View: Interior Spring facing N

15 of 31: VA_NelsonCounty_BlueRidgeTunnel_0015
View: Interior Spring facing N

16 of 31: VA_NelsonCounty_BlueRidgeTunnel_0016
View: Interior Roof Repair facing W

17 of 31: VA_NelsonCounty_BlueRidgeTunnel_0017
View: Interior Brick Arching on West Side facing N

18 of 31: VA_NelsonCounty_BlueRidgeTunnel_0018
View: Interior Brick Arching on West Side facing N

19 of 31: VA_NelsonCounty_BlueRidgeTunnel_0019
View: Interior Brick Arching on West Side facing N

18 of 31: VA_NelsonCounty_BlueRidgeTunnel_0018
View: Interior Brick Arching on West Side facing N

19 of 31: VA_NelsonCounty_BlueRidgeTunnel_0019
View: Interior Brick Roof Arching on West Side facing N

20 of 31: VA_NelsonCounty_BlueRidgeTunnel_0020

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View: Interior Brick Roof Arching on West Side facing N

21 of 31: VA_NelsonCounty_BlueRidgeTunnel_0021

View: Interior Brick Roof Arching on West Side facing E

22 of 31: VA_NelsonCounty_BlueRidgeTunnel_0022

View: Interior Brick Roof Arching on West Side facing E

23 of 31: VA_NelsonCounty_BlueRidgeTunnel_0023

View: Interior Brick Arching on West Side facing N

24 of 31: VA_NelsonCounty_BlueRidgeTunnel_0024

View: Interior Tunnel facing E

25 of 31: VA_NelsonCounty_BlueRidgeTunnel_0025

View: West Portal facing E

26 of 31: VA_NelsonCounty_BlueRidgeTunnel_0026

View: Closeup West Portal Parapet facing E

27 of 31: VA_NelsonCounty_BlueRidgeTunnel_0027

View: Closeup West Portal Parapet facing E

28 of 31: VA_NelsonCounty_BlueRidgeTunnel_0028

View: Closeup West Portal Façade facing NE

29 of 31: VA_NelsonCounty_BlueRidgeTunnel_0029

View: Closeup West Portal Wall facing E

30 of 31: VA_NelsonCounty_BlueRidgeTunnel_0030

View: Landmark Plaque facing NE

31 of 31: VA_NelsonCounty_BlueRidgeTunnel_0031

View: Plaque Closeup facing N

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 100 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Office of Planning and Performance Management, U.S. Dept. of the Interior, 1849 C. Street, NW, Washington, DC.



Legend

County Boundaries

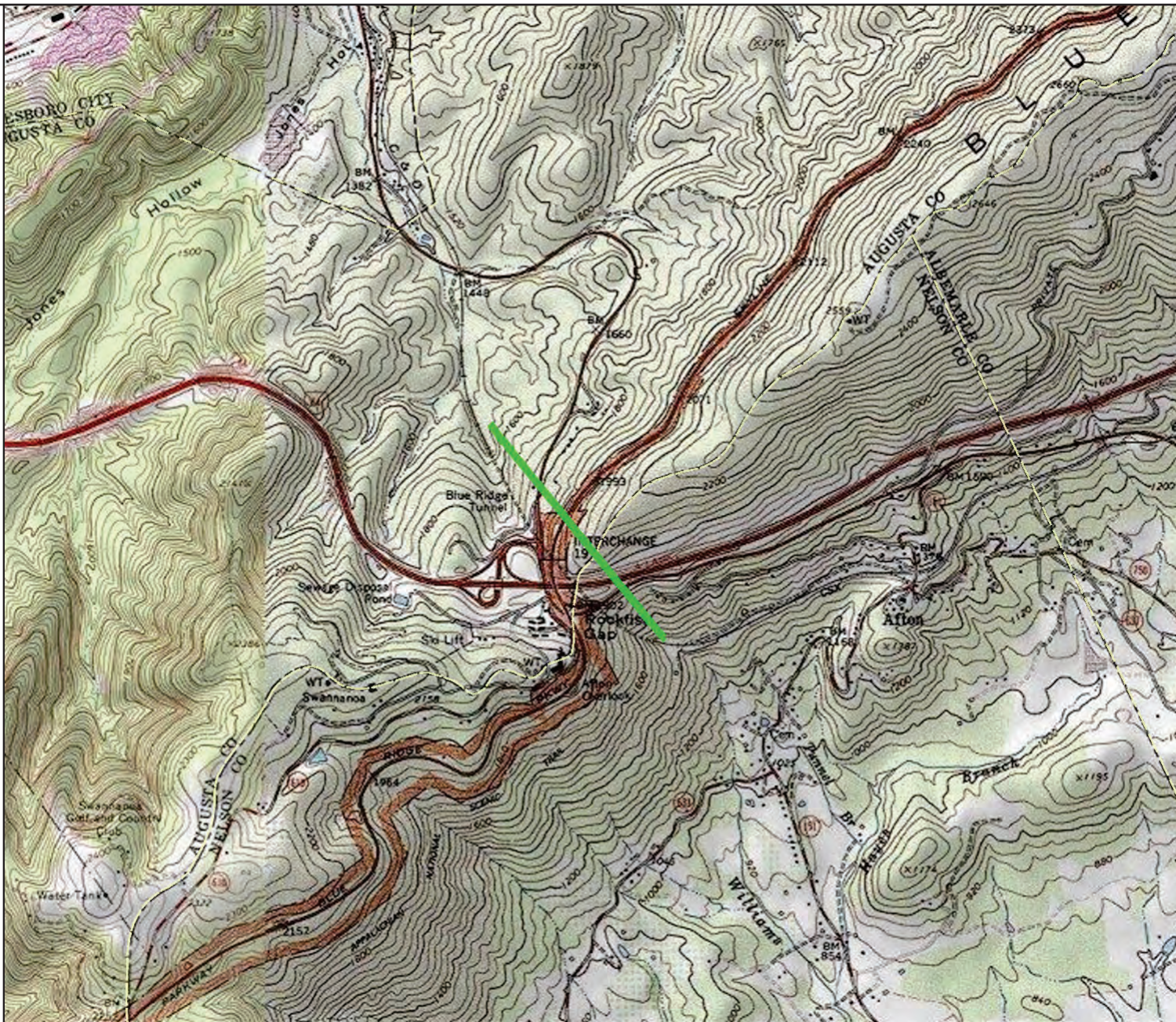
TOPOGRAPHIC MAP

Blue Ridge Tunnel

Nelson and Augusta Counties, VA

DHR No. 062-5105

Historic Boundary



Feet



1:36,112 / 1"=3,009 Feet

Title:

Date: 8/10/2022

DISCLAIMER: Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions. The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites: Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.



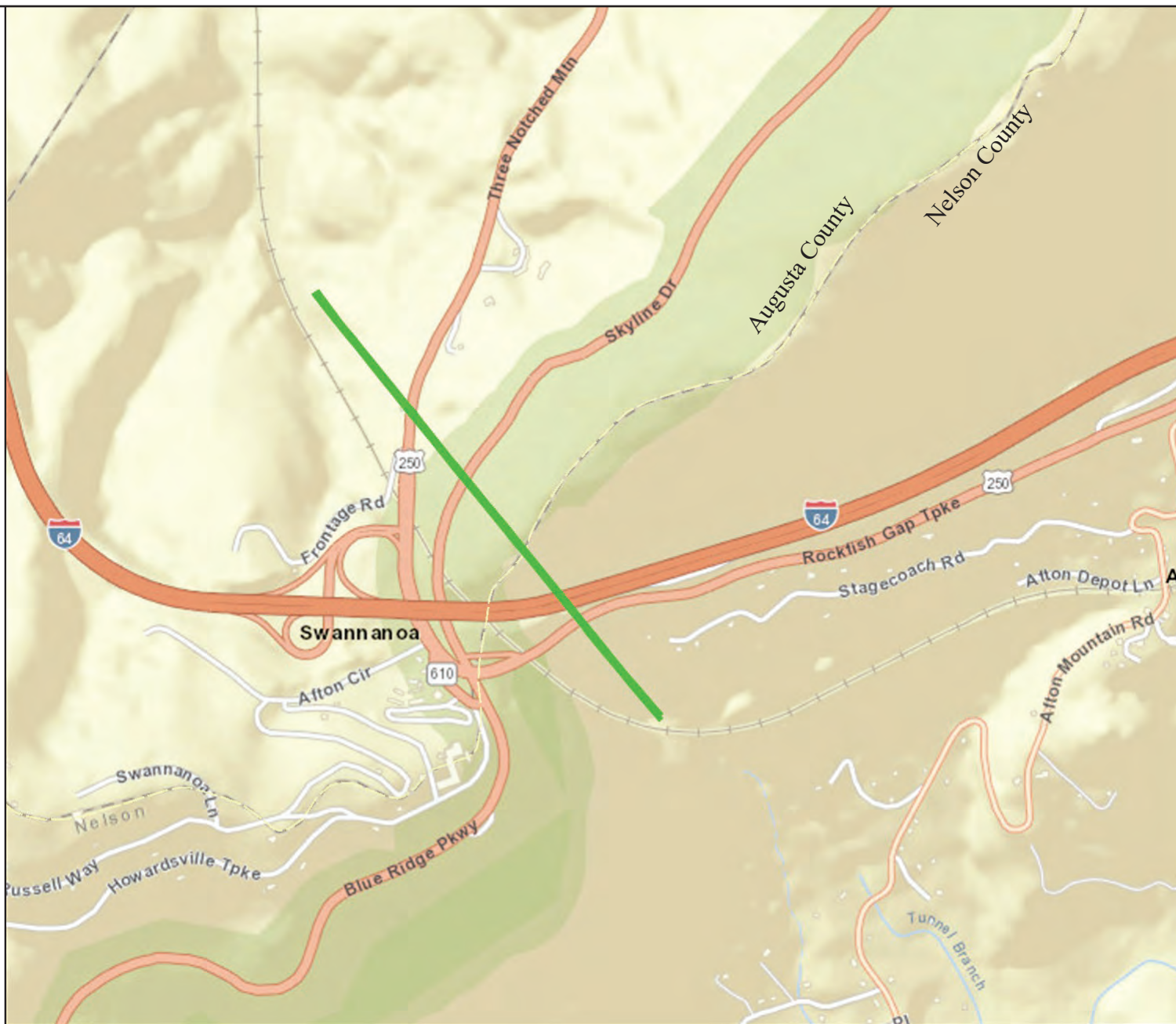
Legend

County Boundaries

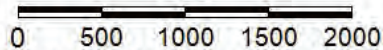
ROAD MAP

**Blue Ridge Tunnel
Nelson County, VA
DHR No. 062-5105**

Tunnel Location



Feet



1:18,056 / 1"=1,505 Feet

Title:

Date: 8/2/2022

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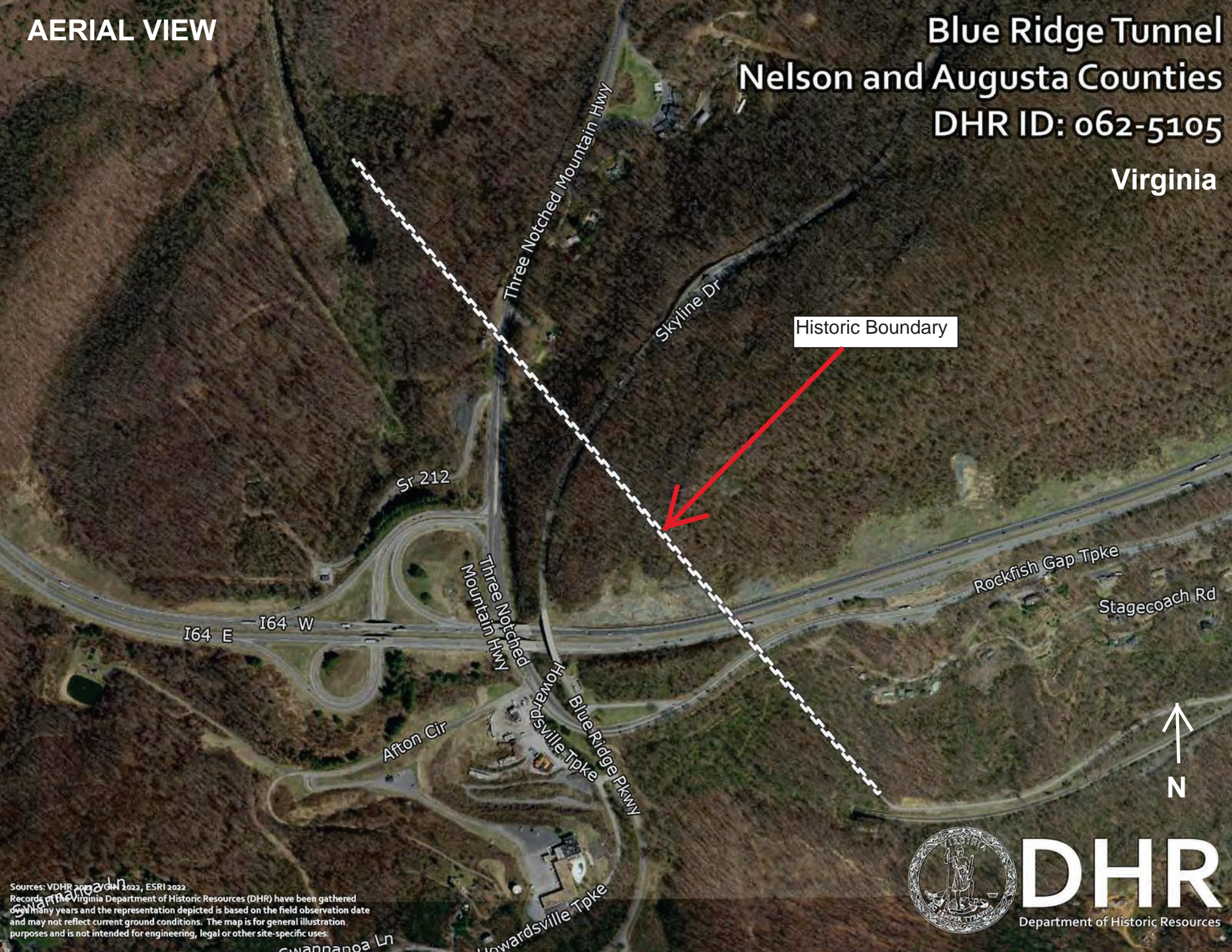
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AERIAL VIEW

Blue Ridge Tunnel Nelson and Augusta Counties DHR ID: 062-5105

Virginia

Historic Boundary



Sources: VDHR 2012, DHR 2022, ESRI 2022
Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years and the representation depicted is based on the field observation date and may not reflect current ground conditions. The map is for general illustration purposes and is not intended for engineering, legal or other site-specific uses.



DHR

Department of Historic Resources



Legend

County Boundaries

LOCATION MAP (1 of 3)

Blue Ridge Tunnel

Nelson and August Counties, VA

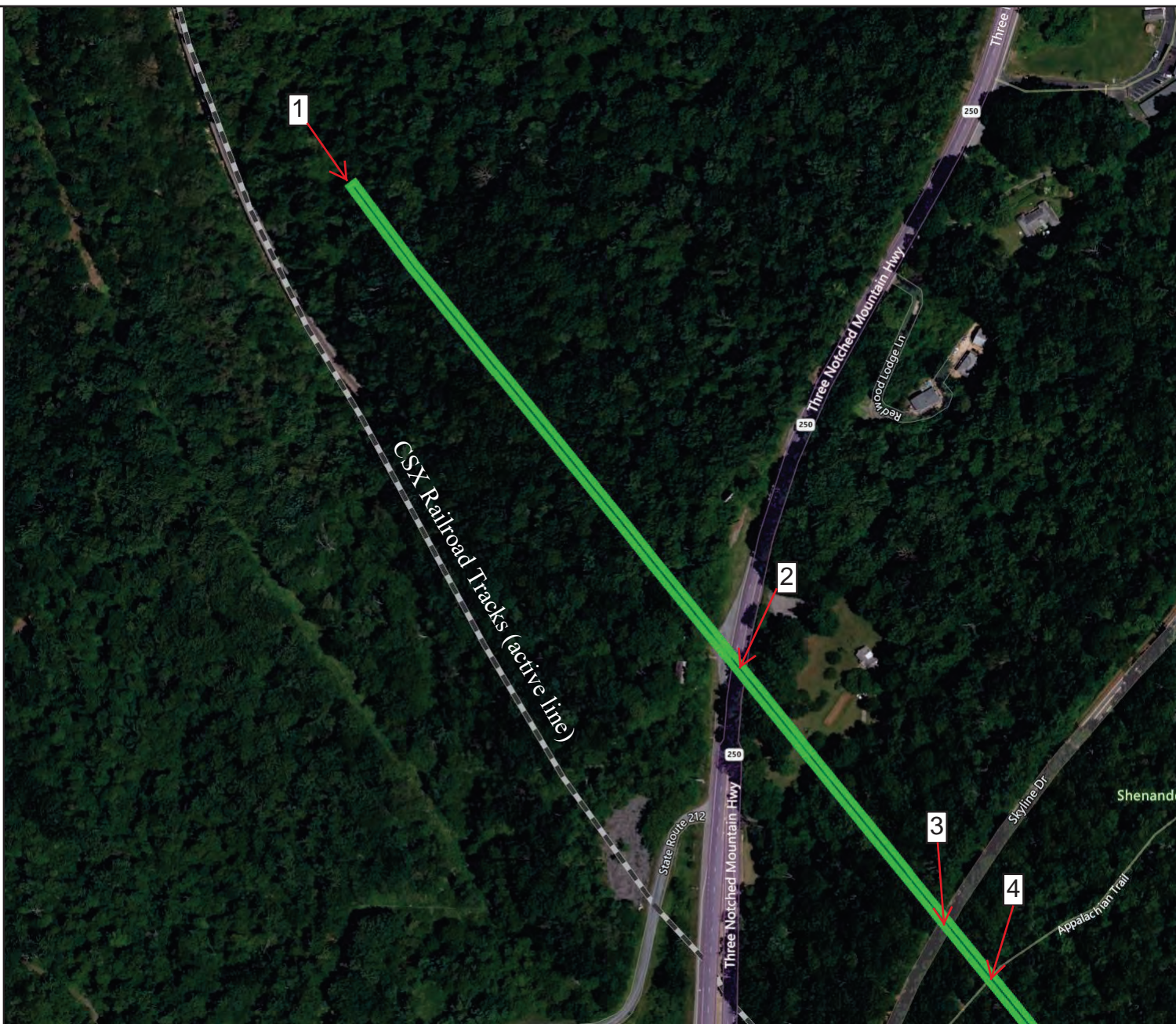
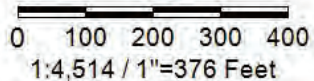
DHR No. 062-5108

Latitude/Longitude Coordinates

- 1. Latitude: 38.039400
Longitude: -78.862360
- 2. Latitude: 38.036790
Longitude: -78.859730
- 3. Latitude: 38.035430
Longitude: -78.858310
- 4. Latitude: 38.035130
Longitude: -78.858000



Feet



Title:

Date: 8/10/2022

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Legend

County Boundaries

LOCATION MAP (2 of 3)

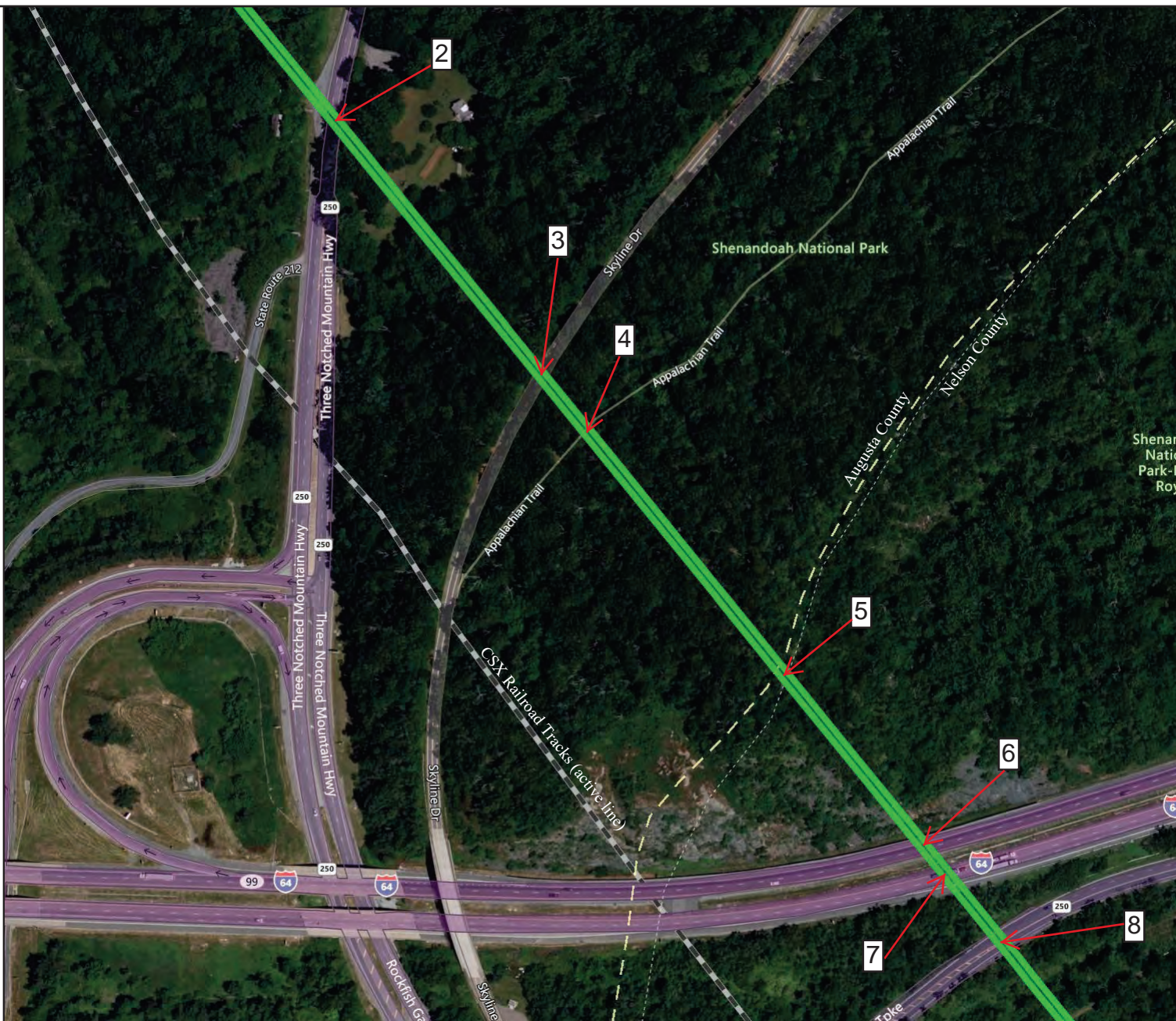
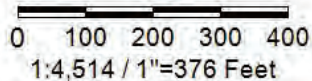
Blue Ridge Tunnel
Nelson and Augusta Counties, VA
DHR No. 062-5105

Latitude/Longitude Coordinates

- 1. Latitude: 38.036790
Longitude: -78.859730
- 2. Latitude: 38.035430
Longitude: -78.858310
- 3. Latitude: 38.035130
Longitude: -78.858000
- 5. Latitude: 38.033830
Longitude: -78.856650
- 6. Latitude: 38.032870
Longitude: -78.855670
- 7. Latitude: 38.032870
Longitude: -78.855680
- 8. Latitude: 38.032360
Longitude: -78.855150



Feet



Title:

Date: 8/10/2022

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Legend

County Boundaries

LOCATION MAP (3 OF 3)

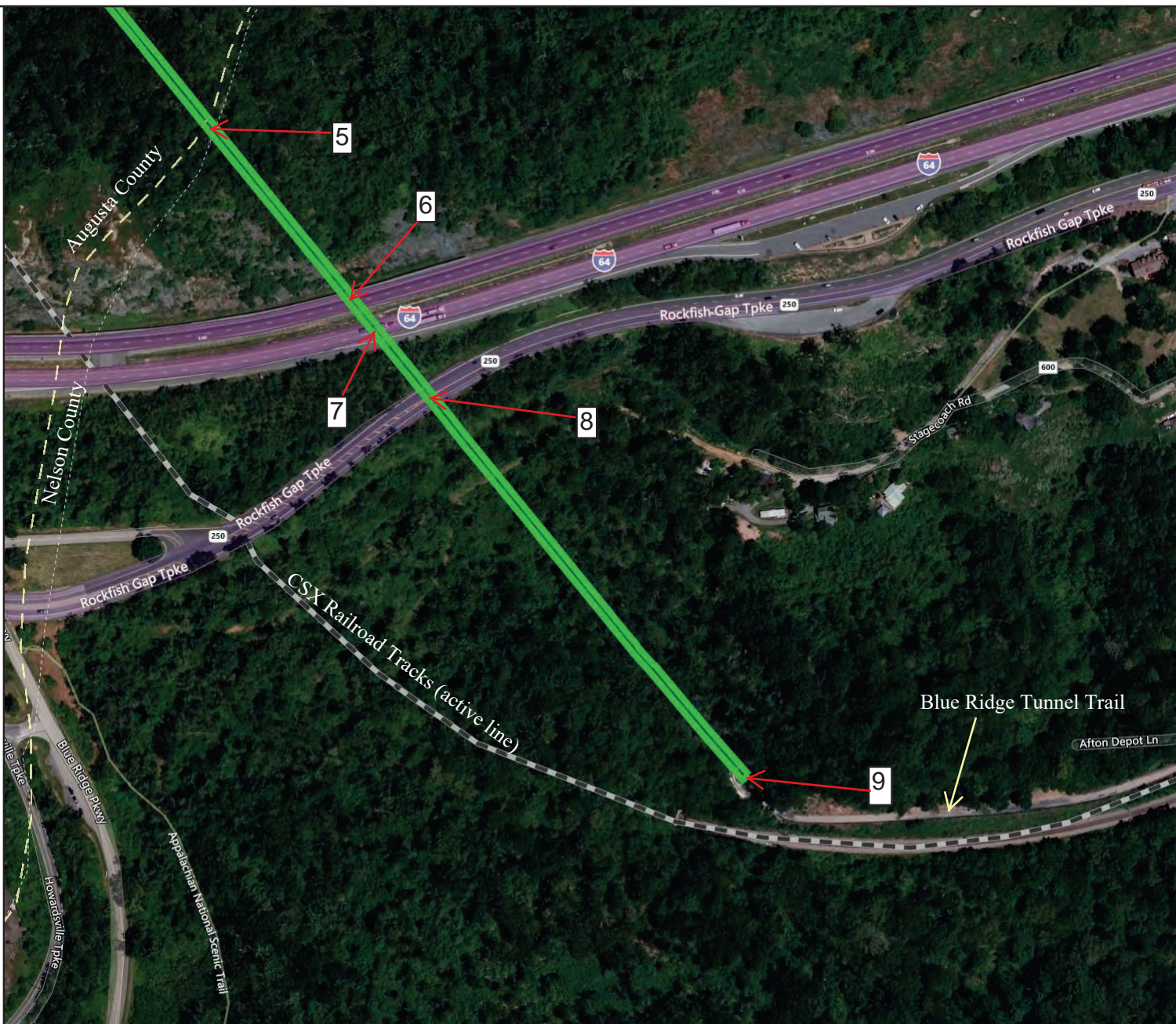
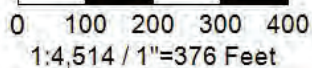
Blue Ridge Tunnel
Nelson and Augusta Counties, VA
DHR No. 062-5105

Latitude/Longitude Coordinates

- 5. Latitude: 38.033830
Longitude: -78.856650
- 6. Latitude: 38.032870
Longitude: -78.855670
- 7. Latitude: 38.032870
Longitude: -78.855680
- 8. Latitude: 38.032360
Longitude: -78.855150
- 9. Latitude: 38.030310
Longitude: -78.852980



Feet



Title:

Date: 8/10/2022

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LIDAR MAP SHOWING TERRAIN

Blue Ridge Tunnel Nelson and Augusta Counties DHR ID: 062-5105

Virginia



Historic Boundary

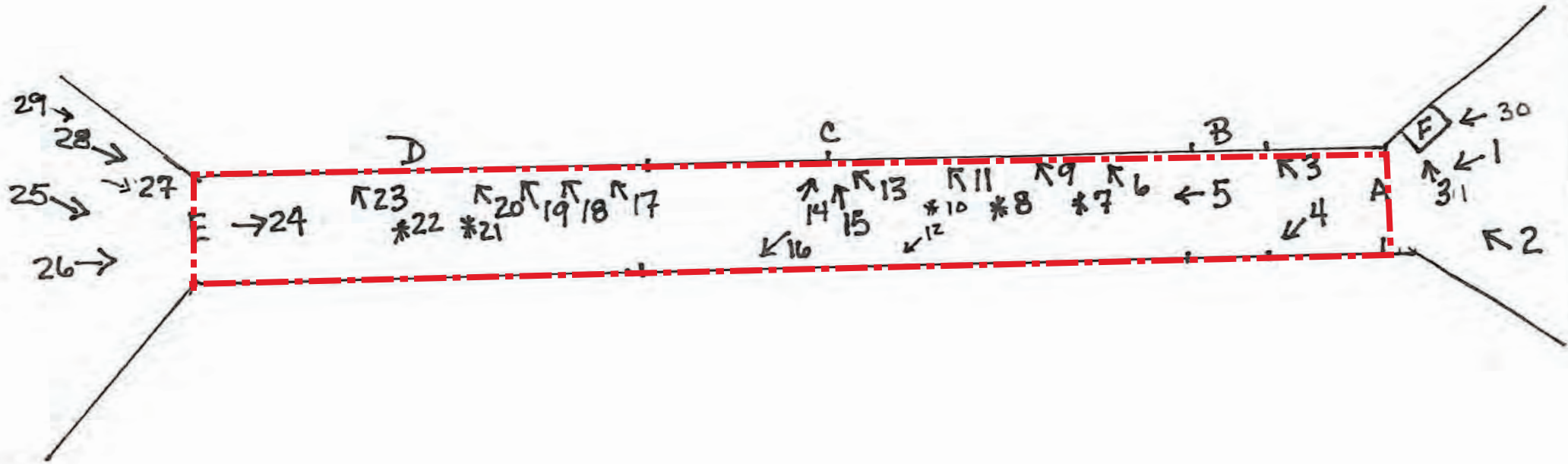


DHR

Department of Historic Resources

This map is a representation of the terrain based on the best available data. It is not intended for engineering or other professional use. The Department of Historic Resources (DHR) has no liability for any errors or omissions. The map is for general informational purposes only.

SKETCH MAP/ PHOTO KEY



NOT TO SCALE
BLUE RIDGE TUNNEL
NELSON COUNTY, VA

VDHR# 062-5105,
002-5075-0564

- A. EAST PORTAL
- B. SMALL BRICK ARCH
- C. SPRING
- D. WESTERN BRICK ARCHING
- E. WEST PORTAL
- F. PLAQUE

--- Historic Boundary