# State Level Historic Documentation Report

State Project: S355-5-0.04
Federal Project: STP-0005(164)D

# MILAM ARCH BRIDGE
## Wyoming County


**Prepared by:**

**Tracy D. Bakic, Structural Historian**

Department of Transportation
Division of Highways
Engineering Division
Environmental Section


**February 26, 2019**

STATE LEVEL HISTORIC DOCUMENTATION
MILAM ARCH BRIDGE

| | |
|---|---|
| Location: | County Route 5 over Laurel Fork<br>Wyoming County<br>West Virginia<br><br>USGS McGraws Quadrangle |
| Date of Construction: | 1925 |
| Builder: | Concrete Steel Bridge Company of Clarksburg, WV |
| Present Owner: | West Virginia Department of Transportation<br>Division of Highways<br>1334 Smith Street<br>Charleston, WV 25301 |
| Present Use: | Vehicular Bridge |
| Significance: | Milam Arch Bridge is historically significant for its engineering association as a notable example of a closed spandrel elliptical concrete arch bridge at county and state levels, and for its association with the Concrete Steel Bridge Company of Clarksburg, WV, a bridge designer and builder distinguishable at a state and regional level. |
| Project Information: | The project has been undertaken due to the deteriorating condition of the bridge and the necessity for a structure that can accommodate two lanes of traffic. Any future deterioration of the bridge will result in its closure. Therefore, this bridge warrants replacement. This documentation was undertaken in February 2019 in accordance with a Memorandum of Agreement among the West Virginia Department of Transportation and West Virginia State Historic Preservation Office. These measures are required due to the replacement of this National Register eligible structure.<br><br>Tracy D. Bakic, Structural Historian<br>West Virginia Division of Highways<br>Charleston, WV 25305<br>February 26, 2019 |

Milam Arch Bridge spans Laurel Fork and is located in northeastern Wyoming County, West Virginia (WV) on County Route (CR) 5, approximately 0.04 miles east of the CR 5 junction with CR 1. Laurel Fork is a tributary of Clear Fork which, in turn, is a tributary of the Guyandotte River. The 2016 average daily traffic (ADT) count for Milam Arch Bridge is 1,065 vehicles per day.

Milam Arch Bridge is a single-span reinforced concrete deck arch structure (closed-spandrel elliptical arch) that was designed and built in 1925 by the Concrete Steel Bridge Company of Clarksburg, WV. There are two full-height reinforced concrete wingwall abutments, each on a reinforced concrete footing. The structure has an earth fill deck and an asphalt wearing surface. The structure has solid concrete parapets/railings (with impressed rectangular motif). The deck includes curbs, but they are presently covered-over with asphalt. There are no sidewalks. At the north (upstream) railing's interior side, at the east end, is a plaque that reads "THE CONCRETE STEEL / BRIDGE CO. / DESIGNERS AND BUILDERS / CLARKSBURG, W. VA." At the south (downstream) railing's interior side, at the west end, is a plaque that reads "1925 / WYOMING COUNTY COURT / GEO. R. STEWART, PRES. / J. A. TOLER, COMR. / E. W. WORRELL, COMR. / DAN W. COOK, CO. CLERK / I. E. BASHAM., CO. ENGR." The bridge has a span length of 50 feet and an overall length (back-to-back of abutments) of 54 feet. Its overall deck width (out-to-out) is 20 feet, six inches and its roadway width (between parapets) is 18 feet, 10 inches.

A July 2018 West Virginia Division of Highway bridge inspection reported that the overall structure of Milam Arch Bridge is in poor condition with deficiencies that include spandrel wall movement and cracking associated with the movement.

**Historic Context**

Wyoming County was established per an act of the Virginia General Assembly on January 26, 1850. By the late 1870s the principal industries of the county were stock, timber, ginseng and wild animal skins. Although there was very little cultivation throughout the county, the main crops were corn, wheat, rye, oats, buckwheat, tobacco and grass. Wyoming County's timber and coal resources attracted land speculators in the late 19th century. In advance of the railroad, the timber industry came to Wyoming County in the 1890s. After 1909 completion of the Virginian Railway (VGN) from Sewell's Point, VA to Deepwater, WV, major coal mining areas were

developed in the county by the 1910s and 1920s, including at Itmann (near Mullens) and Glen Rogers. By the 1920s Ravencliff Development Company provided another economic boon by opening up on one of the state's most productive gas fields in Wyoming County, the location of which was in vicinity of Milam Arch Bridge. "Only 6,247 residents were counted in the 1890 census, but the development of timbering, natural gas production, and coal mining pushed the population to 20,926 in 1930 and to a high of 37,540 in 1950. Like its neighbors, Wyoming County lost people with the loss of mining jobs" (Lilly III 2013).

***Ravencliff Community***

The Milam Arch Bridge is located at the southern end of the Ravencliff community. In earlier years the area or at least its post office was known as McGraw, so-called due to the residency of the McGraw family since the late 1800s, the head of which was John McGraw, the locale's first postmaster. However, long-time community members have recollections of their own or of past others that the area was always known as part of Milam or Ravencliff. The area developed due to nearby lumber, coal and gas industries and today mainly consists of homes dating from ca. 1930 to the present.

The Town of Ravencliff was first platted in 1925, being named by local financier C. H. Mead reportedly due to the prevalence of ravens that nested in the cliffs along the road between his Ravencliff home and Glen Morrison/Sabine, where he had mining interests. Mead was also president and general manager of Ravencliff Development Company and of the Ravencliff Fuel and Supply Co. which supplied gas in Wyoming County.

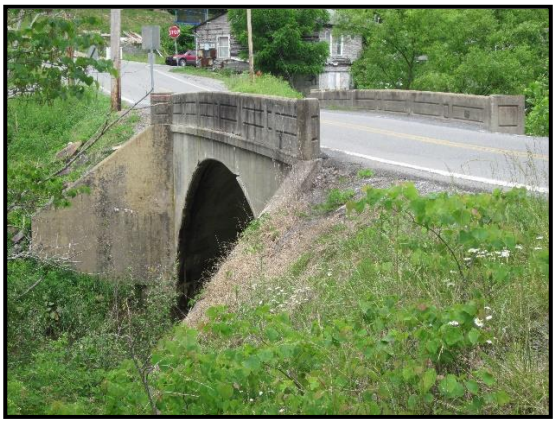
Around 1938 the McGraw PO's name was changed to Ravencliff PO; this post office is now closed. The Pine Grove Baptist Church and the Oak Grove Church of God of Prophecy are long-standing congregations in the community. The area included businesses, such as Scarberry's Store at the CO 1-CO 5 intersection and Lafferty's Store & Gas Station, as well as the local Odd Fellows Hall.

By 1910 a lumber railroad track was built through the area, along the east bank of Laurel Fork. This narrow-gauge track was related to the W. M. Ritter Lumber Company mill in Maben.

This trackage was removed at some point, possibly around or shortly after 1922, the year that Virginia & Western Railway (V&W) built its standard gauge track on the same alignment from the VGN main line in Maben to the mine at Glen Rogers. In 1936 the V&W was merged into the VGN system and the former V&W line became known as VGN's Glen Rogers Branch. A small passenger station was built at Ravencliff around 1927 but was removed shortly after passenger service on the line ended in 1937. VGN was merged into the N&W system at the end of 1959, and then into NS Corp. in 1982. The Glen Rogers Branch, which crossed CR 5 just north of Milam Arch Bridge, has been inactive since 1996.

***County Route 5 & Milam Arch Bridge***

County Route 5 (CR 5) and intersecting CR 1 through Ravencliff appear to have existed as more localized roads by the 1880s and likely earlier. These sections of road were not part of known turnpike/toll routes. There was likely a crossing over Laurel Fork that predated the existing Milam Arch Bridge; however, aside from old maps showing the road extending over Laurel Fork, no specific information regarding an earlier structure at or near the existing bridge has been found.



Wyoming County commissioned installation of the existing reinforced concrete Milam Arch Bridge, contracting with the Concrete Steel Bridge Company of Clarksburg to design and build the span. The construction of this bridge in 1925 was likely part of an overall CR 5 realignment and grading project, including straightening out sections of the route with a lot of zig-zagging, such as between Ravencliff and Milam. Existing CR 5 was an earthen road until it was first asphalt-paved in the late 1940s.

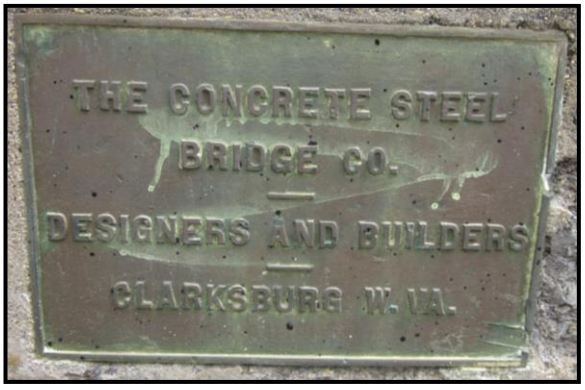
***Reinforced Concrete Deck Arch Bridge Context***

"The advent of modern concrete technology fostered a renaissance of arch bridge construction in the United States. Stone arch bridges constitute an important chapter in American bridge building, but by the second half of the nineteenth century the labor-intensive nature of masonry arch bridge construction contrasted unfavorably with the ease of metal truss erection. Reinforced concrete allowed the arch bridge to be constructed with much more ease than ever before and maintained the load-bearing capabilities of the form" (P.A.C. Spero & Co. 1995:152).

The earliest known existing reinforced concrete arch bridge in the US was designed by Ernest L. Ransome and built in 1889 in Golden Gate Park, San Francisco. Other early names associated with reinforced concrete arch bridge design were Joseph Melan, Fritz von Emperger and Edwin Thacher. However, it was Daniel B. Luten who, within the first three decades of the 20th century, was the dominant designer, builder and promoter of reinforced concrete arch spans in the US (Parsons Brinkerhoff et al. 2005: 53). There were many other companies, though, that incorporated concrete arch bridge design and building as part of their repertoire. In West Virginia, concrete arch deck bridges were built steadily through the 1930s and were very popular in the 1910s and 1920s (KCI et al. 2015: 88).

Concrete deck arch bridges include closed spandrel and open spandrel types, each spanning between concrete abutments. The arch proper is called a ring and the spandrel is the area between the ring and the deck. Milam Arch Bridge represents a closed spandrel deck arch. In this closed version, spandrel walls are built to each side of the span to retain fill material (rubble, stones, or dry soil) deposited within the spandrel area. Traffic loads over the arch are distributed through the fill. Closed spandrel concrete arch bridges were historically the most economical to build over shorter spans. (Carver 2008: 241; KCI et al. 2015: 321; P.A.L Spero & Co. 1995:152).

***Concrete Steel Bridge Company***




"Based in Clarksburg, West Virginia, the Concrete Steel Bridge Company was incorporated in 1914 with Frank Duff McEnteer as president and general manager. His partner was P. M. Harrison, who had previously worked for the York Bridge Company. McEnteer, born in 1882, held a variety of jobs as a draftsman and as an engineer with various construction companies after his gradation [sic; graduation] from Harvard College in 1905. For example, in 1912, McEnteer, as the construction engineer, supervised the construction of Clarksburg's Palace Furniture Company, believed to be the first reinforced concrete building erected in West Virginia. This background obviously influenced McEnteer and his firm specialized in concrete bridges in the 50 to 100 foot range. However, the firm also built other reinforced concrete structures such as commercial buildings and industrial properties" (Carver: 2008:170-171).

"By 1925, the firm had branch offices in Knoxville, Pittsburgh and Harrisburg (Pennsylvania), Huntington (West Virginia), and a subsidiary company in Florida. The firm diversified in the 1920s and purchased the Builders Supply Company of Clarksburg. By 1930, the company had designed and/or built more than one thousand highway and railroad bridges and numerous buildings in eleven states. Much of the firm's work was in West Virginia, and the company was in all probability the most significant builder of reinforced concrete structures in West Virginia in the early twentieth century" (Carver: 2008:170-171).

"Like many bridge companies, the Great Depression forced the company to close, and in 1931 the Concrete Steel Bridge Company was liquidated. McEnteer then worked for the West Virginia State Road Commission from 1932 until 1940. During World War II, McEnteer worked for a private firm on war contracts in the Middle East. From the end of World War II until his death in 1957, McEnteer worked as a consulting structural engineer, specializing in the design of highway bridges and industrial buildings" (Carver: 2008:170-171).

Per the WV Historic Bridge Survey (KCI et al. 2015) there were just over 40 concrete arch bridges still existing in the state that were attributed to the Concrete Steel Bridge Company.

**Eligibility**

Milam Arch Bridge was determined eligible for listing in the National Register of Historic Places (NRHP) for its engineering significance as a notable example of a closed spandrel elliptical concrete arch bridge at county and state levels, and for its association with the Concrete Steel Bridge Company of Clarksburg, WV, a bridge designer and builder distinguishable at a state and regional level.

Milam Arch Bridge will eventually be removed as a result of the planned construction of a new bridge in the same location.

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STATE LEVEL HISTORIC DOCUMENTATION
INDEX TO PHOTOGRAPHS

Milam Arch Bridge
County Route 5 over Laurel Fork
Wyoming County, West Virginia

Photographer(s): Tracy D. Bakic June 12, 2017

| | |
|---|---|
| MILAM ARCH - 1 | Overview; South (Downstream) Elevation. View Northeast |
| MILAM ARCH - 2 | South (Downstream) Elevation. View Northeast |
| MILAM ARCH - 3 | South (Downstream) Elevation. View Northeast |
| MILAM ARCH - 4 | South (Downstream) Elevation. View Northeast |
| MILAM ARCH - 5 | South (Downstream) Elevation & East Approach. View Southwest |
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| MILAM ARCH - 7 | West Approach. View Northeast |
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| MILAM ARCH - 10 | East Approach. View Southwest. |
| MILAM ARCH - 11 | Plaque on East End of North (Upstream) Railing. View Northwest |
| MILAM ARCH - 12 | Plaque on West End of South (Downstream) Railing. View Southeast |

No original bridge plans exist for this bridge.

1. Overview; South (Downstream) Elevation. View Northeast

2. West (Downstream) South (Downstream) Elevation. View Northeast

3. South (Downstream) Elevation. View Northeast

4. South (Downstream) Elevation. View Northeast

5. South (Downstream) Elevation & East Approach. View Southwest

6. North (Upstream) Elevation. View Southeast

7. West Approach. View Northeast

8. West Approach. View Northeast

9. East Approach. View Southwest

10. East Approach. View Southwest.


11. Plaque on East End of North (Upstream) Railing. View Northwest


12. Plaque on West End of South (Downstream) Railing. View Southeast

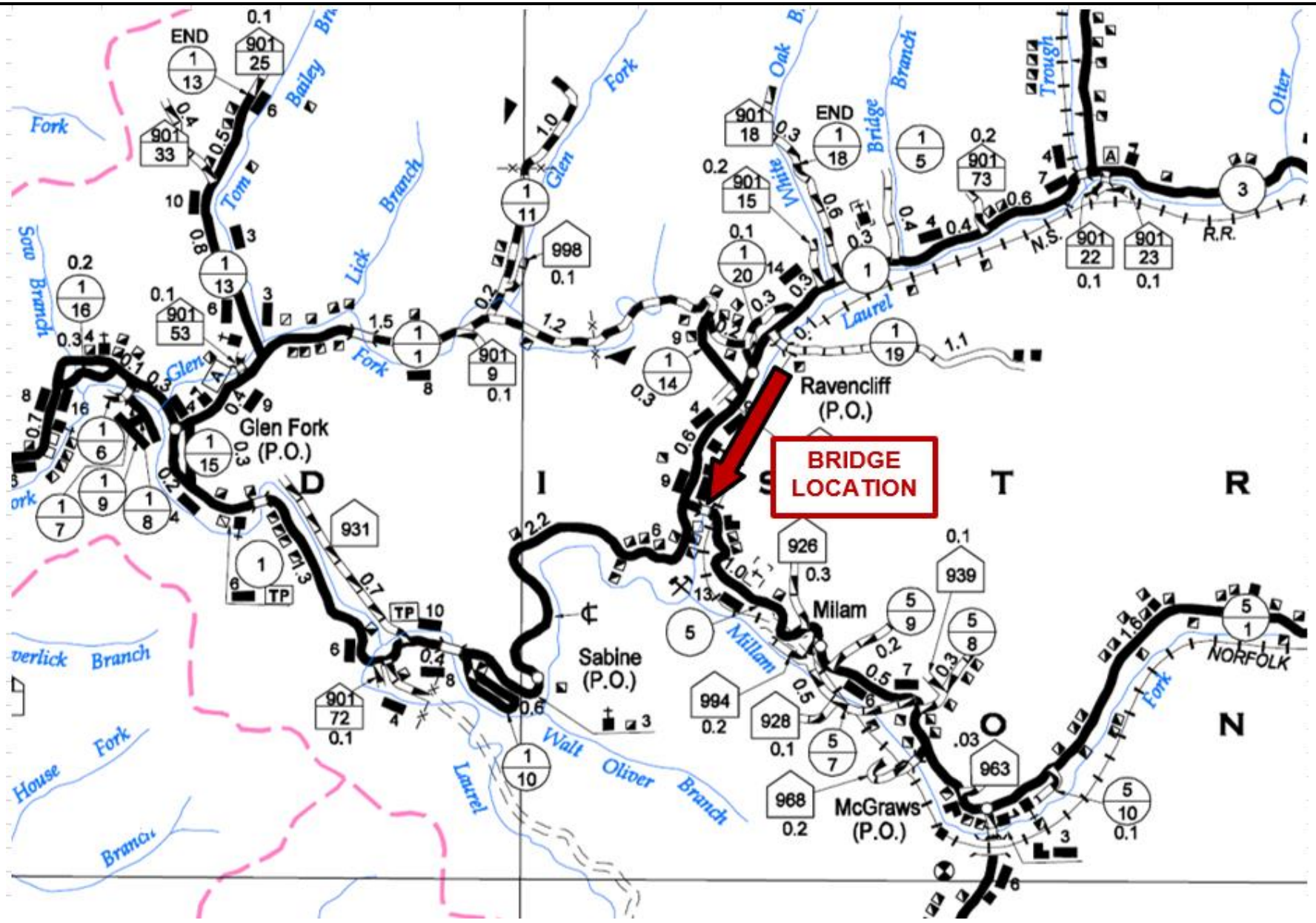
**PROJECT AREA**

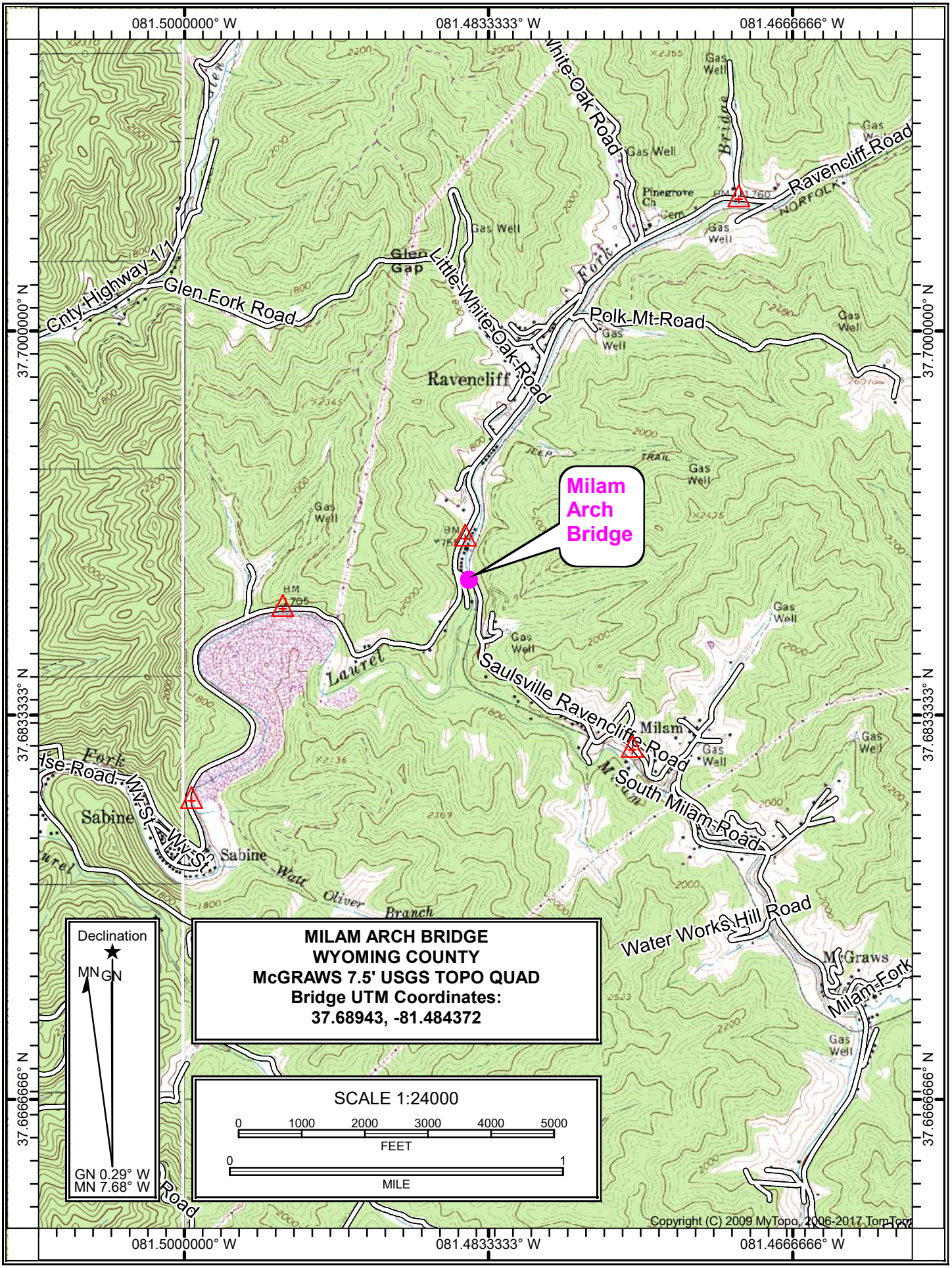
**MILAM ARCH BRIDGE REPLACMENT PROJECT**

**State Project S355-5-0.04**

**County Route 5 over Laurel Fork**

**Wyoming County**

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Milam Arch Bridge
Ravencliff
Polk Mt Road
Glen Fork Road
Cnty Highway 1/1
Little White Oak Road
White Oak Road
Ravencliff Road
Saulsville Ravencliffe Road
South Milam Road
Water Works Hill Road
Milam Fork
Laurel
Sabine
Oliver Branch
Gas Well
Pinegrove Ch
Cem
Milam
McGraws
Declination
MN GN
GN 0.29° W
MN 7.68° W
MILAM ARCH BRIDGE
WYOMING COUNTY
McGRAWS 7.5' USGS TOPO QUAD
Bridge UTM Coordinates:
37.68943, -81.484372
SCALE 1:24000
0 1000 2000 3000 4000 5000
FEET
0 1
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Copyright (C) 2009 MyTopo, 2006-2017 TomTom

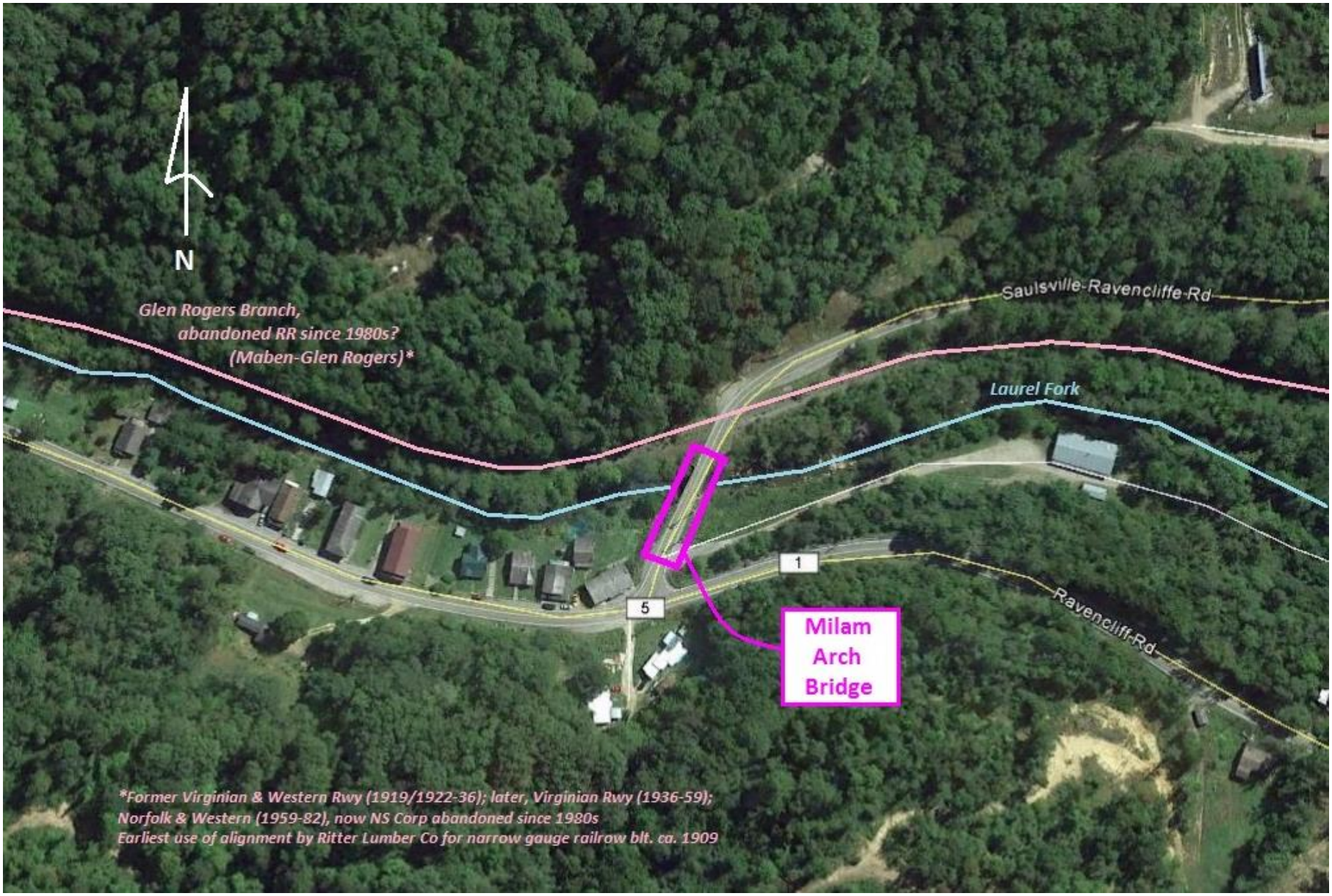
**PROJECT AREA**

**MILAM ARCH BRIDGE REPLACEMENT PROJECT**

**State Project S355-5-0.04**

**County Route 5 over Laurel Fork**

**Wyoming County**



# West Virginia
# Historic Bridge Inventory Form

**Bridge No.** 55-005/00-000.04 **BARS No.** 55A010 **Federal Bridge No.** 00000000055A010 **Bridge Design No.** 9313.0

## IDENTIFICATION INFORMATION

**SHPO Survey No.** WM-0552
**Local Name** MILAM ARCH
**Other Local Name**

**Owner** State Highway Agency
**Status** Extant - in service

## LOCATIONAL AND SETTING INFORMATION

**District** 10 **County** Wyoming **Latitude** 37412400 **Longitude** 081290600
**Location** 0.04 MI E OF CR 1
**Facility Carried By Structur** CR 5
**Features Intersected** LAUREL FORK

**UTM-Northing**
**UTM-Easting**
**UTM Zone**
**Surrounding Land Use** Residential
**Type of Development** Rural - (undeveloped area outside communities)

## STRUCTURAL INFORMATION

**Main Span Type** Concrete Arch - Deck
**Main Span Type Code** 111
**Number of Spans in Main Unit** 001
**Number of Approach Spans** 0000

**Structure Length (ft)** 54
**Length of Maximum Span (ft)** 50
**Average Daily Traffic** 001300 **Year** 2003
**Sufficiency Rating** 0419 **Skew** 48
***(Note: Data current as of April 2006 database)***

## BRIDGE DESCRIPTIVE INFORMATION

**Year Built** 1925
**Year Reconstructed**
**Truss Bridge Type**
**Alteration(s)**

**Arrangement**
**Connection Type**
**Truss Details**
**Date of Alterations (Year)**

**Architectural Treatment(s)**

**Bridge Plate Text**
(2) plaques. "1925 WYOMING COUNTY COURT, GEO. R. STEWART, PRES., J.A. TOLER, COMR., E.W. WORRELL, COMR., DAN W. COOK, COUNTY CLERK, I.E. BASHAM, CO. ENGINEER" AND "THE CONCRETE STEEL BRIDGE CO. DESIGNER AND BUILDERS, CLARKSBURG, W.VA."

## BRIDGE HISTORY

**Engineer or Designer**
**Builder or Fabricator** Concrete Steel Bridge Company
**Bridge Plan Location** None
**Additional Details:** Closed spandrel elliptical arch. Concrete deck with asphalt overlay. Concrete abutments and wingwalls. Concrete parapet with incised rectangular panels along the interior and exterior. Bridge has a 48 degree skew.

| Bridge No. | 55-005/00-000.04 | BARS No. | 55A010 | Federal Bridge No. | 00000000055A010 | Bridge Design No. | 9313.0 |
|---|---|---|---|---|---|---|---|

## NATIONAL REGISTER EVALUATION INFORMATION

**National Register Determination** Eligible **Reason Not Evaluated**

**National Register Determination Date** 2013

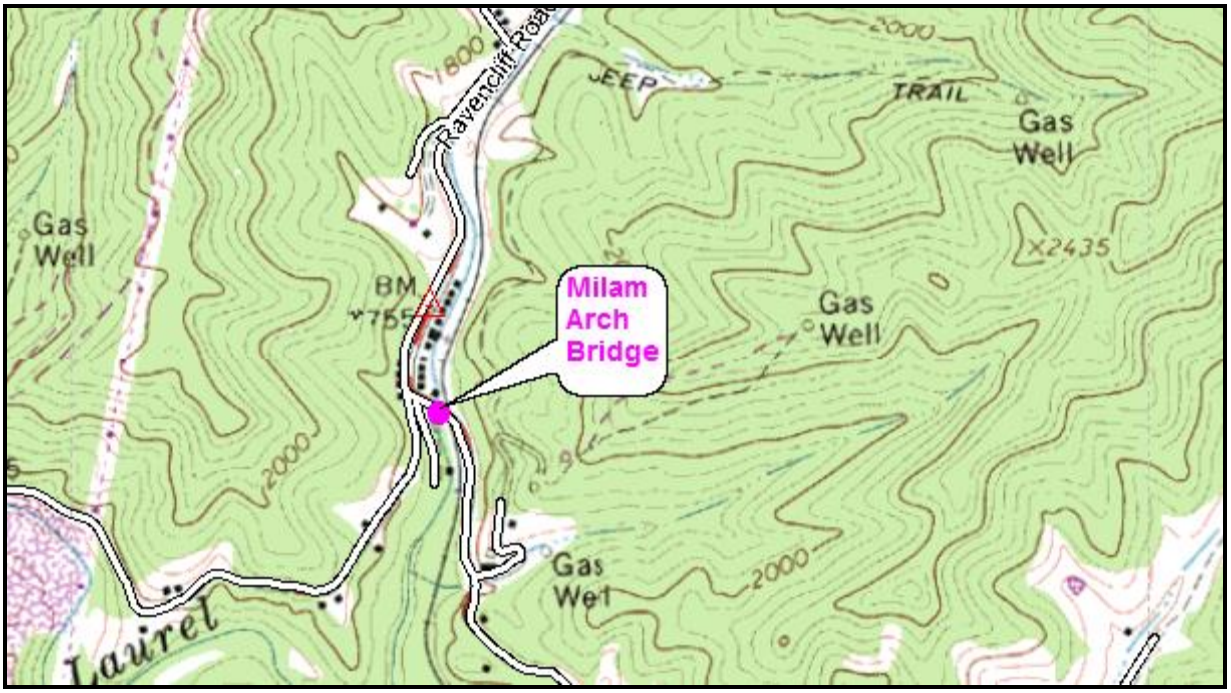
This bridge is not eligible for the National Register under Criterion A as it does not have a significant association with a historic transportation system, program, event, trend, or policy identified through contextual research and survey activities.
This bridge displays an important design innovation or construction technique that represents a variation, evolution, or transition in bridge construction.
This bridge was designed or constructed by a known regional or West Virginia-based engineer, architect, or firm whose work is recognized as distinguishable within the state of West Virginia.
This bridge retains the historic integrity necessary to convey its engineering significance and, therefore, is eligible for the National Register under Criterion C.

**West Virginia Historic Bridge Inventory Form**
**Form Prepared By** Mead & Hunt and KCI
**Form Preparation Date** 2013

# WEST VIRGINIA HISTORIC PROPERTY FORM
# CONTINUATION SHEET

**NAME:** Milam Arch Bridge **SITE#:** WM-0552

**Statement of Significance (cont'd)**:




USGS 7.5" Topo Map: McGraws, WV Bridge UTM Location: 4171446N, 484420E

**Setting:** This bridge spans County Route 5 (CO 5) over Laurel Fork waterway in the vicinity of unincorporated Ravencliff, northeastern Wyoming County. Laurel Fork is a tributary of Clear Fork which, in turn, is a tributary of the Guyandotte River. The bridge is about 140 feet from the intersection of CO 1. The bridge is set within a hilly terrain with Ravencliff residential properties to the north along CO 1 and a former volunteer fire dept. property to the south. The intersection of Glen Rogers Branch RR with CO 5 is about 60 feet east of the bridge.

**Description:** The existing bridge is a single-span reinforced concrete deck arch structure (closed-spandrel elliptical arch) that was designed and built in 1925 by the Concrete Steel Bridge Co. of Clarksburg, WV. There are two full-height reinforced concrete wingwall abutments, each on a reinforced concrete footing. The structure has an earth fill deck and an asphalt wearing surface. The structure has solid concrete parapets/railings (with impressed rectangular motif). The deck includes curbs, but they are presently covered-over with asphalt. There are no sidewalks. At the north (upstream) railing's interior side, at the east end, is a plaque that reads "THE CONCRETE STEEL / BRIDGE CO. / DESIGNERS AND BUILDERS / CLARKSBURG, W. VA." At the south (downstream) railing's interior side, at the west end, is a plaque that reads "1925 / WYOMING COUNTY COURT / GEO. R. STEWART, PRES. / J. A. TOLER, COMR. / E. W. WORRELL, COMR. / DAN W. COOK, CO. CLERK / I. E. BASHAM., CO. ENGR." The bridge has a span length of 50 feet and an overall length (back-to-back of abutments) of 54 feet. Its overall deck width (out-to-out) is 20 feet, 6 inches and its roadway width (between parapets) is 18 feet, 10 inches.

**Statement of Significance**:

The Milam Arch Bridge spans CO 5 over Laurel Fork, basically at the southern end of the Ravencliff community. In earlier years the area or at least its post office was known as McGraw, so-called due to the residency of the McGraw Family since the late 1800s, the head of which was John Mcgraw, the locales first postmaster. However, long-time community members have recollections of their own or of past others that the area was always known as part of Milam or Ravencliff. The area developed due to nearby lumber, coal and gas industries and today mainly consists of homes dating from ca. 1930 to the present. (Bakic 2018).

The Town of Ravencliff was first platted in 1925, being named by local financier C. H. Mead reportedly due to the prevalence of ravens that nested in the cliffs along the road between his Ravencliff home and Glen Morrison/Sabine, where he had mining interests. Mead was also president and general manager of Ravencliff Development Company which operated successful gas wells in the area and of the Ravencliff Fuel and Supply Co. which supplied gas in Wyoming County (Bakic 2018).

Around 1938 the McGraw PO's name was changed to Ravencliff PO; this post office closed about a couple of years ago. The Pine Grove Baptist Church and the Oak Grove Church of God of Prophecy are long-standing congregations in the community. The area included businesses, such as Scarberry's Store at the CO 1-CO 5 intersection, Lafferty's Store & Gas Station and The Green Pig (beer joint), as well as the local Odd Fellows Hall (Bakic 2018). This bridge is just north of the extant former Scarberry's Store/Apartment building.

By 1910 a lumber railroad track was built through the area, along the east bank of Laurel Fork. This narrow-gauge track was related to the W. M. Ritter Lumber Company mill in Maben. This trackage was removed at some point, possibly around or shortly after the year (1922) that Virginia & Western Railway (V&W) built its standard gauge track on the same alignment from the Virginian Railway (VGN) main line in Maben to the mine at Glen Rogers. The VGN had a lease agreement with V&W from the beginning, then V&W was merged into the VGN system in 1936. A small passenger station was built at Ravencliff around 1927 but was removed shortly after passenger service on the line ended in 1937. VGN was merged into the N&W system at the end of 1959, and then into NS Corp. in 1982. The Glen Rogers Branch has been inactive since 1996 (Bakic 2018).

The Glen Rogers Branch crosses CO 5 just north of Milam Arch Bridge; however, the at-grade road crossing has either been removed or, more likely, covered over with asphalt.

County Route 5. CO 5 and intersecting CO 1 through Ravencliff appear to have existed as more localized roads by the 1880s and likely earlier (USGS 1891). These sections of road were not part of known turnpike routes. There was likely a bridge crossing over Laurel Fork that predated the existing Milam Arch Bridge (blt 1925); however, aside from old maps showing the road extending over Laurel Fork (USGS 1912), research for this report did not find specific information regarding an earlier structure at or near the existing bridge.

It is likely that the construction of the existing Milam Arch Bridge in 1925 was part of an overall CO 5 realignment and grading project, including straightening out sections head of the route with a lot of zig-zagging, such as between Ravencliff and Milam (USGS 1927). This appears to be related to a bond project approved by the county court in May 1925 for road improvement projects in Slab Fork District (*BDT* 1925; *RR* 1925). In the 1925-26 SRC annual report future CO 5 appears to have been part of the Milam-Maben route that was being graded by county/district forces by the end of that fiscal year (WV SRC 1926:160). This grading was completed during the 1928-29 fiscal year (WV SRC 1929:187).

CO 5 and intersecting CO 1 were given their designated route numbers by 1933. At that time CO 5 was a longer route than it is today, being about 14.5 miles long from CO 1 (Ravenscliff) to Mullens. Also, by that time CO 1 was gravel or shale surfaced and CO 5 was mainly a graded earthen route, with sections near Tipple and Saulsville that were gravel or shale surfaced (WV SRC 1933).

In the 1940s SRC Project No. 5593 dealt with asphalt paving the entire CO 5 route. CO 5 from Ravenscliff to Maben was completed by 1948 and the section from Maben to Mullens was done by 1950 (WV SRC 1948:275; 1950:427). Around the mid/late 1950s the section from Maben to Mullens became part of SR 54 (WV SRC 1954, 1957). Sometime between 1970 and 1980 the section from Saulsville to Maben became part of SR 97. Since then, CO 5 has been an approximately 4.5-mile-long route from CO 1 in Ravencliff to SR 97 in Saulsville.

Milam Arch Bridge. Wyoming County commissioned installation of the existing Milam Arch Bridge, contracting with the Concrete Steel Bridge Company of Clarksburg to design and build the span.

"Based in Clarksburg, West Virginia, the Concrete Steel Bridge Company was incorporated in 1914 with Frank Duff McEnteer as president and general manager. His partner was P. M. Harrison, who had previously worked for the York Bridge Company. McEnteer, born in 1882, held a variety of jobs as a draftsman and as an engineer with various construction companies after his gradation [sic; graduation] from Harvard College in 1905. For example, in 1912, McEnteer, as the construction engineer, supervised the construction of Clarksburg's Palace Furniture Company, believed to be the first reinforced concrete building erected in West Virginia. This background obviously influenced McEnteer and his firm specialized in concrete bridges in the 50 to 100 foot range. However, the firm also built other reinforced concrete structures such as commercial buildings and industrial properties" (Carver: 2008:170-171).

"By 1925, the firm had branch offices in Knoxville, Pittsburgh and Harrisburg (Pennsylvania), Huntington (West Virginia), and a subsidiary company in Florida. The firm diversified in the 1920s and purchased the Builders Supply Company of Clarksburg. By 1930, the company had designed and/or built more than one thousand highway and railroad bridges and numerous buildings in eleven states. Much of the firm's work was in West Virginia, and the company was in all probability the most significant builder of reinforced concrete structures in West Virginia in the early twentieth century" (Carver: 2008:170-171).

"Like many bridge companies, the Great Depression forced the company to close, and in 1931 the Concrete Steel Bridge Company was liquidated. McEnteer then worked for the West Virginia State Road Commission from 1932 until 1940. During World War II, McEnteer worked for a private firm on war contracts in the Middle East. From the end of World War II until his death in 1957, McEnteer worked as a consulting structural engineer, specializing in the design of highway bridges and industrial buildings" (Carver: 2008:170-171).

Research for this report did not find additional information regarding the contract or construction history of this bridge, nor of a prior bridge at or near this location. One resource did claim that, in 1882, there was only one bridge in Wyoming County (*Bible Society Record* 1882 :87); the source did not give the bridge location.

### *Evaluation*

Criterion A. Other than general association with the history of the area, there is no reason to believe that this bridge has an important link with events or trends that have made a significant contribution to the broad patterns of history. This existing bridge, built in 1925, was likely built as an overall road construction project from CO 1 in Ravencliff south to Maben. The roadwork may have been prompted by increased traffic due to successful natural resource industries in the area, a familiar scenario in early 20th-century West Virginia. Although the bridge is basically within the Ravencliff area, the overall integrity of the surrounding community buildings has diminished due to removal and modification and, thus, the bridge is not within a significant historic district. Therefore, this bridge does not meet NRHP Criterion A for association with events at a national, regional or local level.

Criterion B. Per research and public involvement to this point*, this bridge is not known to have been associated with the significant productive period of some notable person's life, nor to have been associated for any length of time with such a person, nor to be the best representation of such a person's historic contribution. Therefore, this bridge does not meet NRHP Criterion B.

Criterion C. Milam Arch Bridge was previously evaluated for the West Virginia Statewide Historic Bridge Survey (WV Historic Bridge Survey) and was determined eligible for the NRHP under Criterion C (KCI et al. 2013 & 2015).

Per the WV Historic Bridge Survey, a total of 43 concrete arch bridges were attributed to the Concrete Steel Bridge Company. These bridges are distributed amongst 20 counties. Of these, 10 of the Concrete Steel Bridge Company arch bridges – all closed spandrel arch spans - were determined NRHP-eligible. Since the WV Historic Bridge Survey was completed, two of the eligible bridges – Cass Arch (Pocahontas Co.) and Central Station Arch (Doddridge Co.) – have been demolished and replaced. Of the presumed eight existing eligible Concrete Steel Bridge Company arch bridges, two are in Wyoming County – Milam Arch (single arch span) and Clear Fork Arch #3 (which has two arch spans).

This closed-spandrel elliptical arch bridge exhibits an excellent degree of integrity in all aspects as it has not been significantly modified over the years. WVDOH continues to agree with the WV Historic Bridge Survey finding that the Milam Arch Bridge is eligible under NRHP Criterion C. It is eligible under this criterion for its engineering significance as a notable example of a closed spandrel elliptical concrete arch bridge at county and state levels, and for its association with the Concrete Steel Bridge Company of Clarksburg, WV, a bridge designer and builder distinguishable at a state and regional level.

Criterion D. This bridge is not likely to have important information that will contribute to our understanding of human history or prehistory. Construction appears to have utilized commonly known techniques, tools and materials. The potential for information is minimal and, therefore, this bridge does not meet NRHP Criterion D.

* Correspondence was conducted with Preservation Alliance of West Virginia, Wyoming County Commission, Wyoming County Economic Development Authority, Wyoming County Historical Museum, Wyoming County Genealogical Society, National Coal Heritage Area Authority, and Friends of Milam Creek.

**Continuation Sheet Date**: March 20, 2018

**Continuation Sheet Prepared by:**
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**For Survey:**
Milam Arch Bridge Replacement
State Proj #S355-5-0.04
Federal Proj N/A

**Field Survey No.:** APE B1

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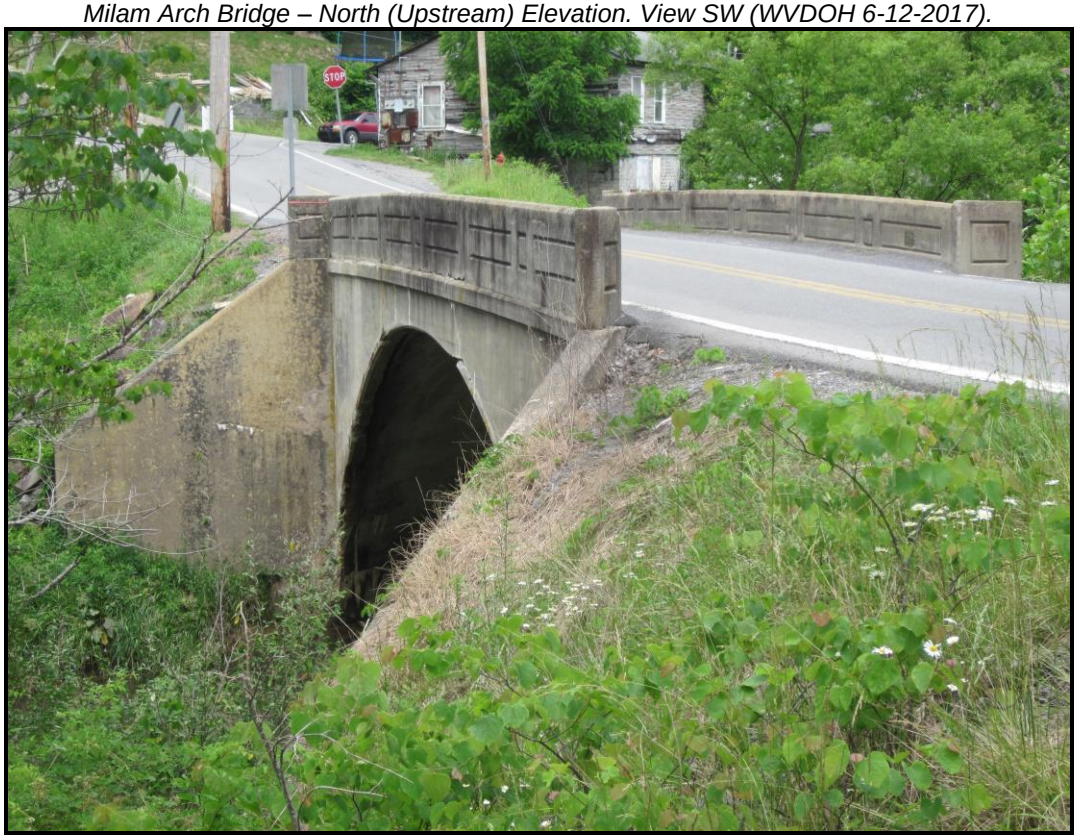
*Milam Arch Bridge, built 1925. South (Downstream) Elevation. View NNE (WVDOH 6-12-2017)*

*Milam Arch Bridge – South (Downstream) Elevation. View NE (WVDOH 6-12-2017).*

*Milam Arch Bridge – North (Upstream) Elevation. View SW (WVDOH 6-12-2017).*




*Milam Arch Bridge – South (Downstream) Elevation & East Approach. View NW (WVDOH 6-12-2017).*

*Milam Arch Bridge – West Approach, taken from County Rt 1.View SE (WVDOH 6-12-2017).*

*Milam Arch Bridge – North (Upstream) Elevation & East Approach. View Southwest (WVDOH 6-12-2017).*

*Milam Arch Bridge – East Approach. View NW (WVDOH 6-12-2017).*

*Milam Arch Bridge – North Parapet Railing. View NW (WVDOH 6-12-2017).*


*Milam Arch Bridge – Plaque on East end of North Railing. View NNE (WVDOH 6-12-2017).*

*Milam Arch Bridge – South Parapet Railing. View SW (WVDOH 6-12-2017).*


*Milam Arch Bridge – Plaque at West End of South Railing. View SW (WVDOH 6-12-2017).*

*Milam Arch Bridge – South (Downstream) Elevation – Abutment Detail. View NE (WVDOH 6-12-2017).*

**MEMORANDUM OF AGREEMENT**
**BY AND AMONG**
**THE WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICER AND THE**
**WEST VIRGINIA DIVISION OF HIGHWAYS**
**REGARDING IMPLEMENTATION OF THE**
**MILAM ARCH BRIDGE REPLACEMENT PROJECT**
**STATE PROJECT #S355-5-0.04**
**FEDERAL PROJECT #STP-0005(164)D**
**WYOMING COUNTY, WEST VIRGINIA**
**SEPTEMBER 2018**

**WHEREAS**, the Federal Highway Administration (FHWA), in cooperation with the West Virginia Division of Highways (WVDOH), proposes to replace the Milam Arch Bridge which spans over Laurel Fork on County Route 5 in Wyoming County, hereinafter referred to as the "Project." The improvements involve the construction of a new bridge and the removal of the existing bridge; and

**WHEREAS**, the FHWA has determined that the Project will have an adverse effect upon Milam Arch Bridge, a property eligible for the National Register of Historic Places (NRHP); and

**WHEREAS**, the FHWA has consulted with the West Virginia State Historic Preservation Officer (WVSHPO) pursuant to 36 CFR Part 800 Implementing Section 106 of the National Historic Preservation Act; (16 U.S.C., 470f); and

**WHEREAS**, the FHWA has determined that the Project will not affect archaeological properties; and

**WHEREAS,** has contacted the Preservation Alliance of West Virginia, National Coal Heritage Area Authority, Wyoming County Commission, Wyoming County Economic Development Authority, Wyoming County Historical Museum, Wyoming County Genealogical Society, and Friends of Milam Creek regarding the Project. None of these groups chose to respond or establish ability in relation to reuse of the existing Milam Arch Bridge in place or by moving it to a new location; and

**WHEREAS,** in accordance with 36 CFR 800.6 (a) (1), the FHWA has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination providing the specified documentation, and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR 800.6 (a) (1) (iii); and

**NOW, THEREFORE,** the FHWA, the WVSHPO and the WVDOH agree that the undertaking will be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties.

## STIPULATIONS

The FHWA shall ensure that the following stipulations are carried out:

**Milam Arch Bridge**

I. Milam Arch Bridge will be documented in its present historic setting. The documentation package will include 5" x 7" black and white or color digital prints in accordance with the NRHP and National Historic Landmarks Survey Photo Policy of May 2013. The documentation package will include hard archival copies of the information outlined in this stipulation as well as digital copies in the form of PDFs for reports and documents, and TIFF files for photographs. The WVSHPO will be given the opportunity to review the documents before submission of final versions.

II. A brief history of Milam Arch Bridge will be included in the aforementioned documentation package, along with fully completed West Virginia Historic Property Inventory (HPI) forms and copies of any available plan sheets and/or drawings of the bridge from WVDOH bridge files. The history will address the bridge's background in relation to its location and surroundings and, as well, will address the associated topics of: the development/evolution of the bridge's concrete arch design, including the design's representation in West Virginia and Wyoming County; and the history of the bridge's builders – Concrete Steel Bridge Company of Clarksburg, WV. The WVSHPO will be given the opportunity to review the documentation before submission of final version.

III. WVDOH staff will provide Wyoming County Schools Board of Education, Wyoming County Public Library, Wyoming County Historical Museum, and the Friends of Milam Creek a copy of the Milam Arch Bridge documentation for reference and educational purposes.

IV. 200 color brochures about Milam Arch Bridge will be developed by the WVDOH. The brochures will be distributed to the following recipients: Wyoming County Schools Board of Education (50 brochure copies); Wyoming County Public Library (50 brochure copies), Wyoming County Historical Museum (50 brochure copies), and the Friends of Milam Creek (50 brochure copies). As well, each recipient will receive a CD format digital copy of the brochure for future reproduction once the original hard copies provided by WVDOH have been depleted. The WVSHPO will be given the opportunity to review all educational materials developed for this stipulation.

V. Milam Arch Bridge's builders/informational plaques will be given to the Friends of Milam Creek per that organization's request.

VI. Milam Arch Bridge will be documented on the West Virginia historic bridge website (http://www.highwaysthroughhistory.com).

## VII. Duration

This Memorandum of Agreement (MOA) will expire if its stipulations are not carried out within five (5) years from the date of its execution. At such time, and prior to work continuing on the undertaking, the FHWA shall either (a) execute an MOA pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. Prior to such time, FHWA may consult with other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation XI below. FHWA shall notify the signatories as to the course of action it will pursue.

## VIII. Post-Review Discoveries

If any unanticipated discoveries of historic properties or archaeological sites, including human burial sites and/or skeletal remains, are encountered during the implementation of this undertaking, work shall be suspended in the area of the discovery until the WVDOH has developed and implemented an appropriate treatment plan in consultation with the WVSHPO pursuant to 800.13 (b).

## IX. Monitoring and Reporting

Each year following the execution of this MOA until it expires or is terminated, FHWA shall provide all parties to this MOA a summary report detailing work carried out pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in FHWA's efforts to carry out the terms of this MOA.

## X. Dispute Resolution

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, FHWA shall consult with such party to resolve the objection. If FHWA determines that such objection cannot be resolved, FHWA will:

A. Forward all documentation relevant to the dispute, including the FHWA's proposed resolution, to the ACHP. The ACHP shall provide FHWA with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FHWA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. FHWA will then proceed according to its final decision.

B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, FHWA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, FHWA shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.

C. FHWA's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

## XI. Amendments

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

## XII. Termination

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation XI, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, FHWA must either (a) execute a MOA pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. FHWA shall notify the signatories as to the course of action it will pursue.

**EXECUTION** of the Memorandum of Agreement by the FHWA, WVSHPO, the WVDOH and the ACHP, and implementation of its terms evidence that the FHWA has afforded the ACHP an opportunity to comment on the Milam Arch Bridge Replacement project and its effects on historic properties, and that the FHWA has taken into account the effects of the undertaking on the historic property.

**SIGNATORIES PAGE**

Federal Highway Administration — Date: 11/7/18

West Virginia Deputy State Historic Preservation Officer — Date: 10/2/18

**INVITED SIGNATORY:**

West Virginia Division of Highways — Date: 10-22-18