

State Level Historic Documentation Report

State Project No. S352-20/5-0.00

Federal Project No. N/A

FR#: 13-126-WZ

FIREMANS BRIDGE Wetzel County



Prepared by:

Tracy D. Bakic, Structural Historian

Department of Transportation
Division of Highways
Engineering Division
Environmental Section

July 16, 2013

STATE LEVEL HISTORIC DOCUMENTATION
FIREMANS BRIDGE

Location: County Route 20/5 (Trader Run Road), over the South Fork of Fishing Creek
Folsom
Wetzel County
West Virginia

USGS Folsom Quadrangle

Date of Construction: 1917

Builder: Luten Bridge Company

Present Owner: West Virginia Department of Transportation
Division of Highways
1900 Kanawha Boulevard, Building 5, Room A-110
Charleston, WV 25305

Present Use: Vehicular Bridge

Significance: The Firemans Bridge as an example of an early bridge type constructed by a master builder.

Project Information: The project has been undertaken due to the poor condition of the bridge. Any future deterioration of the bridge would result in its closure. Therefore, the existing bridge warrants replacement. This documentation was undertaken in July 2013 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 prior to replacement of this National Register eligible structure.

Tracy D. Bakic, Structural Historian
West Virginia Division of Highways
Charleston, WV 25305
July 16, 2013

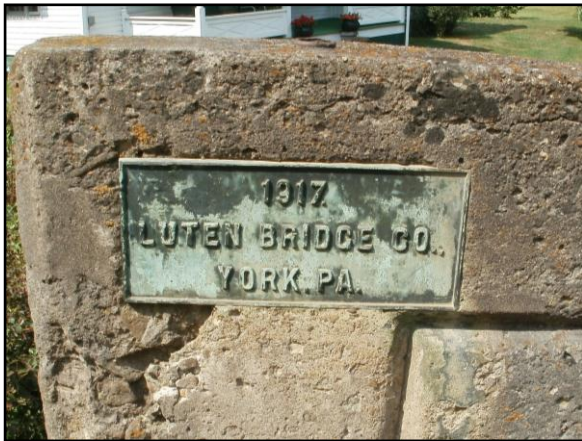
The Firemans Bridge spans the South Fork of Fishing Creek and is located in southeastern Wetzel County, West Virginia on County Route 20/5, approximately 250 feet south of its intersection with West Virginia (WV) Route 20.



The bridge was built in 1917 by the Luten Bridge Company. The structure consists of one reinforced concrete filled arch span supported by two stub abutments. The overall length measured from end to end of parapet wall is 37'-6". The roadway width is 15'-6" and the horizontal clearance is 16'-0". The arch is 33'-0" long, measured from springing line to springing line, and has beveled edges. The concrete parapet walls (or railings) are 3'-1/2" high and 8" wide, with each including five incised rectangular decorative elements on both its deck- and outward-facing sides. The wearing surface consists of dirt gravel and deteriorated bituminous concrete. The bridge does not include sidewalks. The Average Daily Traffic (ADT) in 2012 was 50 vehicles, including mail carriers. The bridge is currently silhouette posted for H-20 Ton, T3-27 Ton, SU4-29 Ton, HS-32 Ton and 3S2-33 Ton vehicles per Commissioner's Order dated November 4, 2009.

Firemans Bridge is in overall poor condition. A few conditions noted in the Periodic Inspection Report dated August 15, 2011 included: the underside of the arch shows increased spalling with exposed reinforcing steel, cracks and moisture stains; the reinforced concrete tie exhibit cracks, concrete loss and exposed reinforcing steel; the spandrel walls exhibit a spall at the springing line on the downstream side of one of the abutments and concrete deterioration near the opposite abutment on the upstream side and along the arch ring; and the shot and chip wearing surface continues to exhibit cracks, ruts and potholes.

Daniel B. Luten is nationally recognized as an important figure in bridge building and the design of reinforced concrete arch bridges. The central idea of Luten's design practice was to "produce a more efficient structure" by reducing the material required to build for a given strength. His innovative approaches to reinforcing concrete arches with longitudinal tension rods resulted in efficient bridge designs. Luten patented his designs and they were utilized throughout the US. Luten often provided agents and builders with drawings and a license to use his plans for a set



price. One such agent was Alex B. Whittaker who in 1909 incorporated his own company - the Luten Bridge Company of York, Pennsylvania - and was joined by his brother John Whittaker, Lucius G. Brown, and G. W. Drury. The Firemans Bridge has been identified as an example of a tied arch, an uncommon bridge type that is closely associated with Luten's work and that features an interconnected system of

reinforcement through the ring, abutments, and streambed to enable the arch to be unusually thin.

The Firemans Bridge is eligible for the National Register of Historic Places under Criterion C as an example of an uncommon type of concrete arch bridge that represents the individuality or variation of features particular to this bridge type constructed by a master builder.

BIBLIOGRAPHY

KCI Technologies, Inc. and Mead & Hunt, Inc., *Draft* West Virginia Statewide Historic Bridge Survey, February 2013.

West Virginia Division of Highways, Bridge Files, Maintenance Division, Building 5, Capitol Complex, Charleston, West Virginia, August 2012.

West Virginia Division of Highway, Bridge Replacement Study, Engineering Division, Building 5, Capitol Complex, Charleston, West Virginia, August 2012.

West Virginia Division of Highway, Bridge Renovation Study, Engineering Division, Building 5, Capital Complex, Charleston, West Virginia, 2012.

West Virginia Division of Highways, Firemans Bridge Replacement Letter Report (to SHPO), Maintenance Division, Building 5, Capitol Complex, Charleston, West Virginia, November 2012.

West Virginia Division of Highways, Historic Property Inventory Form, Engineering Division, Building 5, Capitol Complex, Charleston, West Virginia, October 2012.

STATE LEVEL HISTORIC DOCUMENTATION
INDEX TO PHOTOGRAPHS

Firemans Bridge

County Route 20/5 (Trader Run Road), over the South Fork of Fishing Creek

Wetzel County, West Virginia

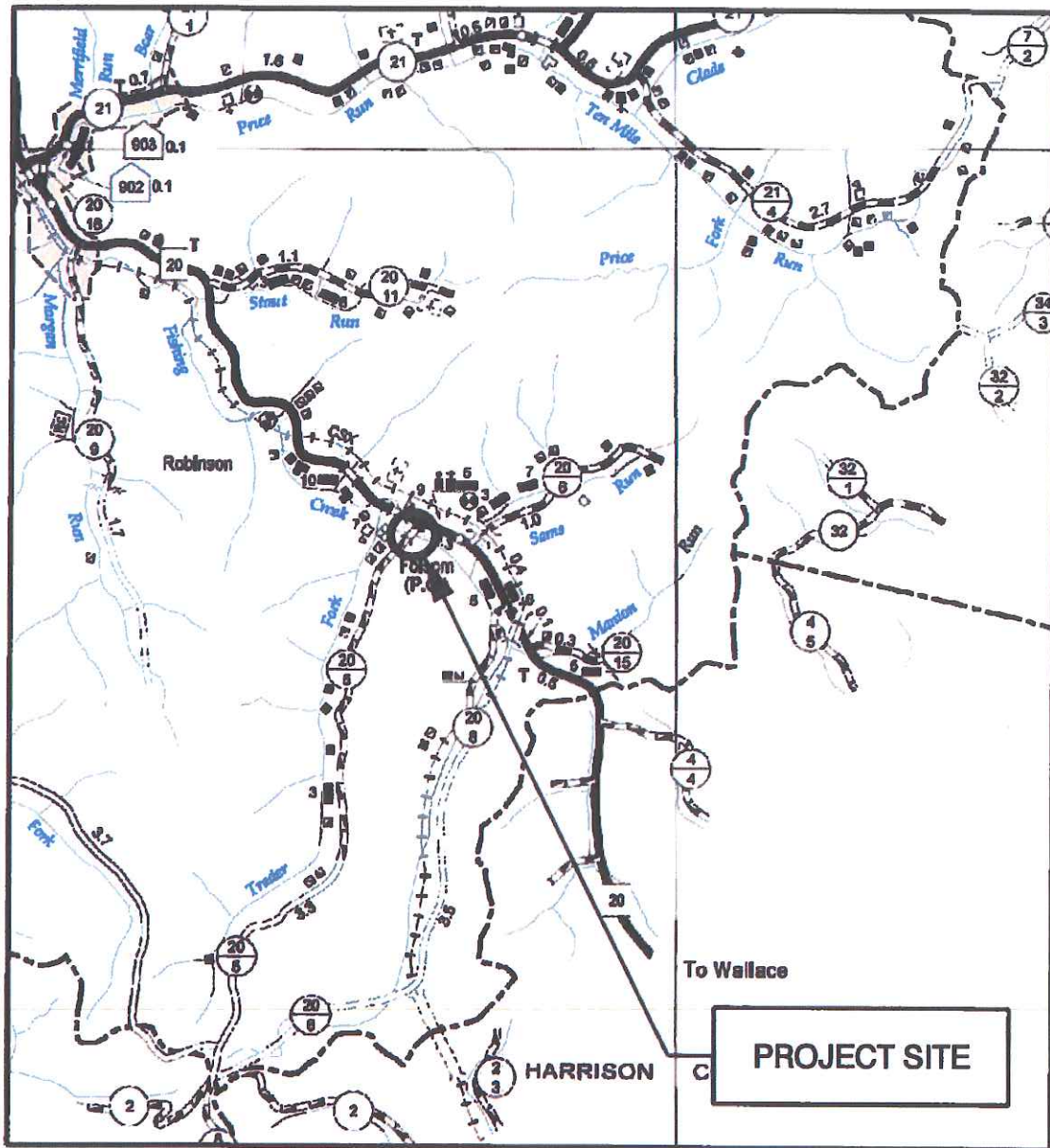
Photographer(s): Ginger Williford

Sept. 7, 2012 and Dec. 31, 2007

- | | |
|-------------|---|
| FIREMANS -1 | West Elevation of Bridge Looking Upstream, View Southeast |
| FIREMANS -2 | Bridge, Highlighting East Elevation, View Northwest |
| FIREMANS -3 | County Route (CR) 20/5 Toward South Bridge Entry, View Northeast |
| FIREMANS -4 | Intersection of West Virginia Route 20 and CR 20/5, Showing CR 20/5
Toward North Bridge Entry (in distance), View Southwest |
| FIREMANS -5 | North Entry to Bridge Deck, Showing West Bridge Railing, 1910 Residence
and Southwest Corner of Fire Department Building, View Southwest |
| FIREMANS -6 | South End of West Bridge Railing with Luten Bridge Co. Plaque and with the
1910 Residence in Background, View West |
| FIREMANS -7 | Bridge Plate, South End of West Railing, View West; Reads "1917/LUTEN
BRIDGE CO./YORK, PA", View West |
| FIREMANS -8 | Bridge Plate, North End of East Railing, View East; Reads "J. M. BERDINE,
PRES./W. T. FRANCIS/N. G. MYERS [left brace identifies all previous as
'COUNTY COURT.']/S.MYERS, CLERK./J. M. COCHRAN, SURVEYOR." |

No original bridge plans exist for this bridge.

BRIDGE REPLACEMENT STUDY
FIREMANS BRIDGE
STATE PROJECT NUMBER: S352-20/5-0.00
FEDERAL PROJECT NUMBER: NA
WETZEL COUNTY



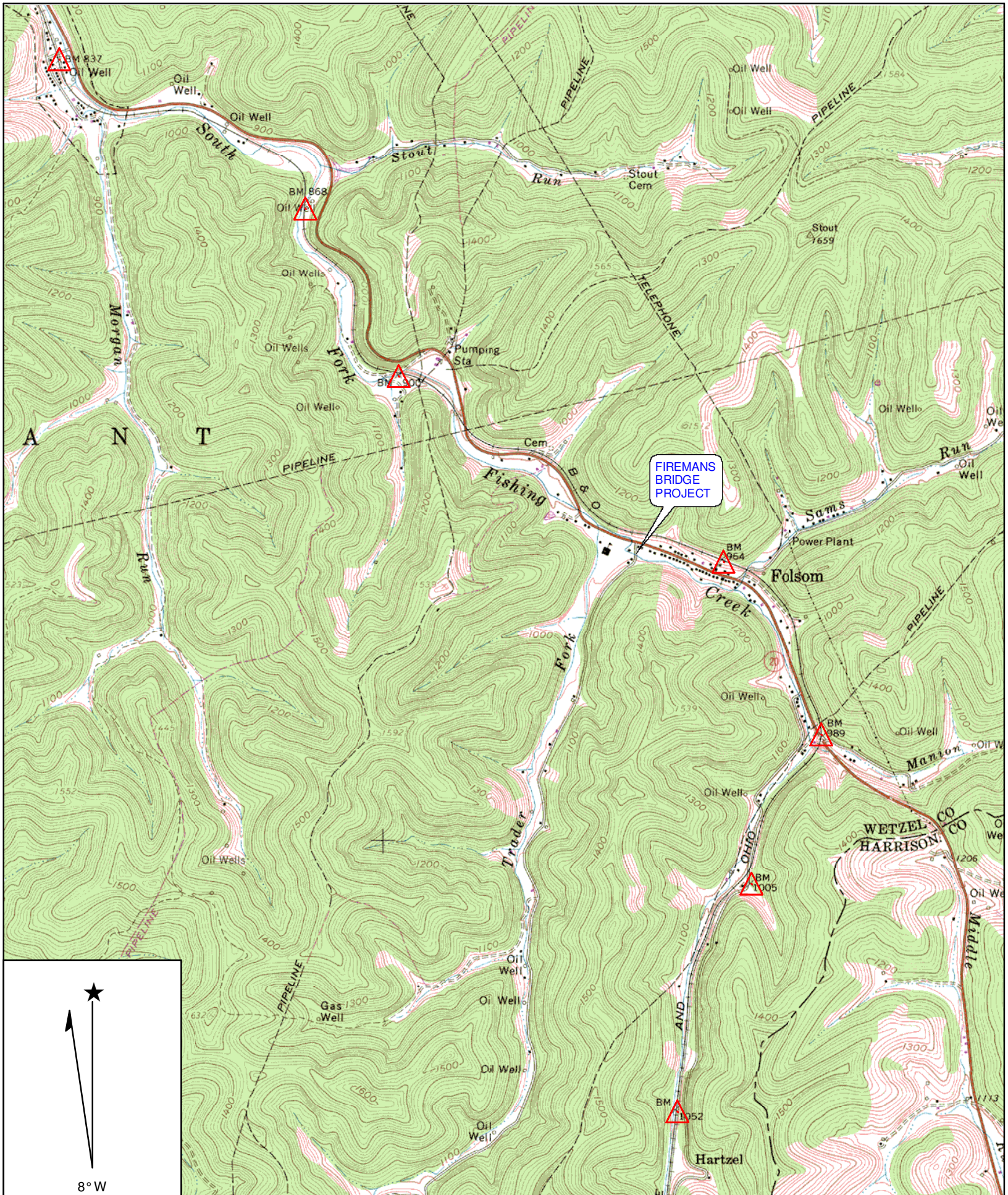
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT SIX BRIDGE DEPARTMENT

DISTRICT ENGINEER:

[Signature]

DATE:

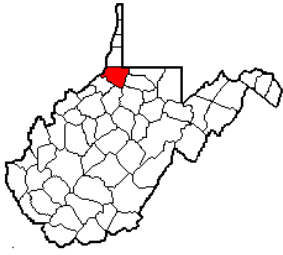
8/23/12




Name: FOLSOM
 Date: 7/3/2013
 Scale: 1 inch equals 2000 feet

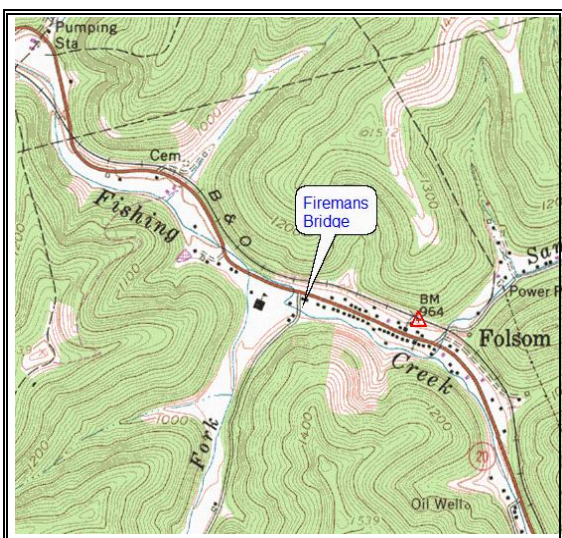
Location: 039° 28' 10.31" N 080° 32' 04.10" W
 Caption: FIREMANS BRIDGE
 Wetzel County
 State Project S352-20/5-0.00

Internal Rating: _____



WEST VIRGINIA HISTORIC PROPERTY INVENTORY FORM

Street Address County Route (CR) 20/5, near its intersection with WV Route 20.	Common/Historic Name/Both <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> Fireman's Bridge	Field Survey # 1	Site # (SHPO Only)
Town or Community Folsom (also known as Robinson)	County Wetzel	Negative No.	NR Listed Date
Architect/Builder Daniel Luten	Date of Construction 1917	Style (SHPO Only) Concrete Arch	
Exterior Siding / Materials Concrete	Deck Material Deck Material: Dirt gravel and deteriorated bituminous concrete	Foundation Setting Rock	
Property Use or Function Transportation Bridge	UTM Zone 17 NAD 1983 Easting 540742.00 Northing 4369241.86		
Survey Organization & Date WVDOH October 23, 2012	Quadrangle Name Folsom		
Part of What Survey / FR# Fireman's Bridge Replacement Wetzel County State Project: S352-20/5-0.00 Federal Project: NA			



Site No.

Name: Fireman's Bridge Replacement
 Survey #: State Project: S352-20/5-0.00
 Survey / FR#:

Present Owners WVDOH	Owners Mailing Address 1900 Kanawha Blvd. East Building 5, Room 450 Charleston, WV 25305						
Describe Setting <div style="float: right; text-align: right;"> Unknown -- <1 Acres <input type="checkbox"/> Archaeological Artifacts Present </div> <p>The bridge is in the unincorporated community of Folsom (also known as Robinson) located on County Route 20/5 near its intersection with WV Route 20 in Wetzel County.</p>							
<table style="width: 100%; border: none;"> <tr> <td style="width: 70%;">Description of Buildings or Site (Original and Present)</td> <td style="width: 10%; text-align: center;">Stories</td> <td style="width: 20%; text-align: center;">Front Bays</td> </tr> <tr> <td colspan="3"> The bridge consists of one reinforced concrete arch span supported by two stub abutments. The arch is 33'-0" long , the concrete parapet walls are 3'-01/2" high and 8" wide. There are no curbs or sidewalks. </td> </tr> </table>		Description of Buildings or Site (Original and Present)	Stories	Front Bays	The bridge consists of one reinforced concrete arch span supported by two stub abutments. The arch is 33'-0" long , the concrete parapet walls are 3'-01/2" high and 8" wide. There are no curbs or sidewalks.		
Description of Buildings or Site (Original and Present)	Stories	Front Bays					
The bridge consists of one reinforced concrete arch span supported by two stub abutments. The arch is 33'-0" long , the concrete parapet walls are 3'-01/2" high and 8" wide. There are no curbs or sidewalks.							
Alterations <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe							
Additions <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, describe							
Describe All Outbuildings None							
Statement of Significance: See Continuation Sheet							
Bibliographical References A Context For Common Historic Bridge Types, Prepared by Parsons Brinckerhoff and Engineering and Industrial Heritage, October 2005 KCI Technologies: Draft Historic context, WV Statewide Historic Bridge Survey, October 2006. Folsom, West Virginia: http://wn.wikipedia.org/wiki/Folsom , West Virginia							
<table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Form Prepared By:</td> <td style="width: 40%; text-align: right;">Date: October 24, 2012</td> </tr> <tr> <td colspan="2"> Name/Organization: Ginger Williford Address: WV Division of Highways Capitol Complex Building 5, Rm. 463 Charleston, WV 25305 Phone #: 558-9676 </td> </tr> </table>		Form Prepared By:	Date: October 24, 2012	Name/Organization: Ginger Williford Address: WV Division of Highways Capitol Complex Building 5, Rm. 463 Charleston, WV 25305 Phone #: 558-9676			
Form Prepared By:	Date: October 24, 2012						
Name/Organization: Ginger Williford Address: WV Division of Highways Capitol Complex Building 5, Rm. 463 Charleston, WV 25305 Phone #: 558-9676							

WEST VIRGINIA HISTORIC PROPERTY FORM

CONTINUATION SHEET

Name: Fireman's Bridge Replacement
Survey Number: State Project: S352-20/5-0.00
Project / FR#: NA

The Firemans Bridge was constructed in 1917 by the Luten Bridge Company of York, PA and is located on County Route 20/5, also known as Trader Run Road. The Bridge crosses the South Fork of Fishing Creek in the rural community of Folsom. The bridge was constructed during the creation of the State Road Bureau and the State Road Commission. When in 1917, the West Virginia Legislature replaced the State Road Bureau with the State Road Commission. Twenty-five (25) concrete arch bridges remain that were constructed between 1913 and 1929, 15 of which cross one or more branches of Fish Creek. In the late 1930's the saw mill and a number of houses were removed for the construction of West Virginia Route 20.

Neither County Route 20/5 nor WV Route 20 are a part of any toll road or are they associated with any roads movement or event. They are not a main transportation corridor and the bridge is currently classified as a dual lane bridge. Therefore, the Fireman's Bridge is not eligible for listing in the National Register of Historic Places under Criterion A for its local significance as a transportation link or as a part of a historic district.

The Fireman's Bridge was constructed in 1917 by the Luten Bridge Company of York, PA. Daniel B. Luten is nationally recognized as an important figure in bridge building and the design of reinforced concrete arch bridges. However, the Fireman's Bridge is not directly associated with Daniel B. Luten as an individual. Therefore, the Fireman's Bridge is not eligible for listing in the National Register of Historic Places under Criterion B.

The Fireman's Bridge was constructed in 1917 by the Luten Bridge Company of York, PA. Daniel B. Luten is nationally recognized as an important figure in bridge building and the design of reinforced concrete arch bridges. Luten was a Purdue University professor, bridge designer, and engineer based in Indianapolis. The central tenet of Daniel Luten's design practice was to "produce a more efficient structure," by reducing the material required to build for a given strength. His innovative approaches to reinforcing concrete arches with longitudinal tension rods resulted in efficient bridge designs that he protected through the patent system. The Firemans Bridge is a single, simple span reinforced concrete deck bridge. It is supported by two reinforced concrete skew back abutments with full height pilasters. The railing consists of posts and rails made of reinforced concrete. The Fireman's Bridge is an example of a tied arch, an uncommon bridge type. The tied arch features an interconnected system of reinforcement through the ring, abutments and streambed. The type is closely associated with the work of Daniel B. Luten, a nationally recognized bridge designer. Therefore, it is our recommendation that the Fireman's Bridge is eligible for listing in the National Register of Historic Places under Criterion C for its local significance as a concrete arch bridge constructed by a company recognized as a master builder.

The Firemans Bridge provides little potential to yield information important to history or prehistory. Therefore, the Firemans Bridge is not eligible for listing in the National Register of Historic Places under Criterion D.

**MEMORANDUM OF AGREEMENT
BY AND AMONG
THE WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICER
AND THE WEST VIRGINIA DIVISION OF HIGHWAYS**

**REGARDING IMPLEMENTATION OF THE FIREMANS BRIDGE
REPLACEMENT PROJECT**

**STATE PROJECT #S352-20/5-0.00
WETZEL COUNTY, WEST VIRGINIA
December 2012**

WHEREAS, the West Virginia Division of Highways (WVDOH) proposes to replace Firemans Bridge, which spans Fish Creek in Wetzel County, hereinafter referred to as the Project. The improvements involve the construction of a new bridge upstream of the current location and the removal of the existing bridge; and

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

WHEREAS, the WVDOH has consulted with the West Virginia State Historic Preservation Officer (WVSHPO) pursuant to West Virginia Code Chapter 29, Article 1 and its implementing regulations (82 CSR 2), as well as 36 CFR Part 800.5 Implementing Section 106 of the National Historic Preservation Act; (16 U.S.C., 470f); and

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

NOW, THEREFORE, 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 WVDOH shall ensure that the following stipulations are carried out:

Firemans Bridge

- I. Firemans Bridge will be documented in its present historic setting. The documentation package will include 5"x7" black and white digital prints in accordance with the National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion of March 2005.
- II. A brief history of the structure will be included along with fully completed West Virginia Historic Property Inventory forms and copies of plan sheets and drawings

of the bridge from WVDOH bridge files if they are available.

- III. The Firemans Bridge will be included in any comprehensive mitigation plan developed collaboratively by the WVDOH the FHWA and the WVSHPO. The Firemans Bridge will be included as an example of a Luten Concrete Arch in educational materials developed as part of the comprehensive mitigation plan. These materials will be distributed to the Wetzel County Schools as appropriate for content and grade level. The WVSHPO will be given the opportunity to review all educational materials developed for this Stipulation.
- IV. The bridge will be documented on a future website listing historic bridges once the West Virginia Historic Bridge Survey is complete.

V. Duration

This 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 WVDOH shall execute a MOA pursuant to 82 CSR 2.5.4.d. Prior to such time, WVDOH may consult with other signatories to reconsider the terms of the MOA and amend it in accordance. WVDOH shall notify the signatories as to the course of action it will pursue.

VI. 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 36 CFR 800.13 (b).

VII. Monitoring and Reporting

Each year following the execution of this MOA until it expires or is terminated, WVDOH 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 WVDOH's efforts to carry out the terms of this MOA.

VIII. Amendments

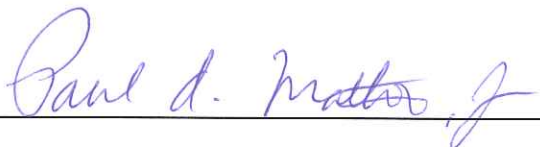
This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the SHPO.

IX. 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 VIII, 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, WVDOH must execute a MOA pursuant to 82 CSR 2.5.4.d.

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




West Virginia Division of Highways



Date



West Virginia Deputy State Historic Preservation Officer



Date



1. West Elevation Looking Upstream, View Southeast



2. View Northwest, Highlighting East Elevation of Bridge



3. County Route (CR) 20/5 Toward South Bridge Entry, View Northeast



4. Intersection of West Virginia Route 20 and CR 20/5, Showing CR 20/5 Toward North Bridge Entry (in distance), View Southwest



5. North Entry to Bridge Deck, Showing West Bridge Railing, 1910 Residence and Southwest Corner of Fire Dept. Building, View SW



6. South End of West Bridge Railing, with Luten Bridge Co. Plaque and with the 1910 Residence in Background, View West



7. Bridge Plate, South End of West Railing, View West



8. Bridge Plate, North End of East Railing, View East