

CATEGORY A2
REINSPECTION
COST: \$1,869.34

POSTING STATUS: A

LEHIGH COUNTY BRIDGE NO. 13
LOCATION: LOWHILL TOWNSHIP
RUHETOWN BRIDGE
JORDAN ROAD OVER JORDAN CREEK
CUSTODIAN: LEHIGH COUNTY

BMS NO. 39720505939013

DATE OF INSPECTION: DECEMBER 22, 2011
INSPECTOR: BRENT MILLER
DAVE ZIEGLER

Confidential - Structure Safety Inspection Study

This document is the property of the County of Lehigh. The data and information contained herein are part of a structure safety inspection study. This safety study is only provided to those official agencies or persons who have responsibility in the highway transportation system and may only be used by such agencies or persons for safety-related planning or research. The document and information are confidential pursuant to 65 P.S. §66.1 et seq. and 23 U.S.C. §409 and may not be published, reproduced, released or discussed without the written permission of the County of Lehigh.

Prepared for: County of Lehigh
17 South Seventh Street
Allentown, PA 18101

Prepared by: STV Incorporated
205 West Welsh Drive
Douglassville, PA 19518

TABLE OF CONTENTS

LOCATION MAP

INSPECTION REPORT

GENERAL DESCRIPTION

EXISTING CONDITIONS AND DEFICIENCIES

BRIDGE LOAD RATING

POSTING REVIEW

MAINTENANCE/REHABILITATION RECOMMENDATIONS

APPENDIX

STRUCTURE PHOTOGRAPHS

iFORMS (BMS2 INSPECTION DATA)

WATERWAY SKETCH

INSPECTION REPORT

GENERAL DESCRIPTION

The structure carrying Jordan Road over Jordan Creek is a 2 span P/S adjacent box beam bridge with a length of 125 feet. The roadway has a curb to curb width of 28.0 feet. The overall condition is poor, as indicated by the condition ratings given on PennDOT iFORMS.

EXISTING CONDITIONS AND DEFICIENCIES

RATINGS (Previous inspection rating in parenthesis)

6 (7) APPROACH:

The oil/chipped bituminous pavement is lightly worn, with minor edge cracking observed. A little erosion was noted at the far left corner. One displaced post each at the near right and near left guiderail has no affect on the strength of the rail.

6 (6) DECK:

The oil/chipped bituminous surface is lightly worn and has several recently sealed cracks. On the bottom drainage stains, efflorescence and some rust stains were noted along the beam joints.

4 (4) SUPERSTRUCTURE:

Variable length, non-continuous, hairline longitudinal cracks are typical across the bottom flanges of the beams. A couple cracks are as wide as 0.035", with some minor rust stains noted. Rust and stains were also noted at a few of the weep holes. The grouted transverse tendon pockets are lightly cracked, with a couple spalls and delaminations noted.

6 (6) SUBSTRUCTURE:

A few vertical shrinkage cracks and other light hairline cracking were observed at the abutments and pier. The far abutment stem has a small spall at the top left, while the far right wing has several tiny delaminations/cover spalls. There is also some very light scour at the far right corner. The upstream nose of the pier has a couple small delaminations toward the top and some debris (say 3 cy) and scour.

6 (6) STREAM CHANNEL:

The creek is well aligned toward the pier and span 2. There is some flow into, but not out of, span 1, with a deposit extending about 150' downstream from span 1. As noted above, there is some accumulated debris on the pier nose.

4 (4) STRUCTURAL EVALUATION (APPRAISAL):

Based on the Superstructure rating.

BRIDGE LOAD RATING

A rating analysis has previously been performed for this bridge. The Operating rating factors were computed using the Load Factor Design Method. The Inventory rating factors were computed using the controlling factors of the Load Factor Design Method and the Allowable Stress Method (Serviceability). These ratings are listed below.

Component	Inventory Rating - Tons				Operating Rating - Tons			
	H20	HS20	ML80	TK527	H20	HS20	ML80	TK527
Interior	18	23	20	23	55	70	60	69

POSTING REVIEW

Existing Posting: None

Proposed Posting: None

RECOMMENDATIONS

The following items are in need of repair and are prioritized with the most important items first. When applicable, an estimated cost follows the repair.

Short Term

1. Replace/update the bridge barrier to meet current standards. (\$25,000)
2. Remove debris and place rock protection around the upstream pier nose. Consider removing the deposit downstream from span 1 to improve the flow through the bridge. All work in the channel requires a permit from the DEP. (\$8,000)
3. Monitor the cracking in the bottom of the beams, and consider a superstructure replacement if conditions worsen.
4. Repair the spalled areas at the far abutment and wings.

Long Term

1. This bridge should be inspected by a qualified bridge inspector or engineer a minimum of once every two years.

APPENDIX



1. The approach roadway, looking from the near side.



2. The approach roadway, looking from the far side.



3. Elevation view, looking downstream toward the bridge.



4. Elevation view, looking upstream toward the bridge.



5. View of the top deck surface, looking from the near left.



6. View underneath span 1, looking toward the near abutment.



7. Sealed crack and spalls across the pier.



8. Typical view of longitudinal cracks and beam joint stains/efflorescence in span 1.



9. Typical view of cracks in span 2.



10. View of crack and moisture at the near end of B6 in span 1.



11. Fascia beam web cracking over the pier.



12. Rusty drainage coming from the near weep hole of B2 in span 1.



13. Delaminated grout at the span 2, far right fascia beam transverse tendon pocket.



14. Cover spall at the top of the far left stem.



15. Debris and scour at the upstream nose of the pier.