ATTACHMENT NOT FOUND

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Section I A - D

I. GENERAL INFORMATION

A. LOCATION/IDENTIFICATION

SFN Number: 6831761 Owner: COUNTY

Municipality: GASPER TWP County: PREBLE District: 08

Feature Carried: LONGMAN ROAD
Feature Under: SUGAR RUN

B. STRUCTURAL INFORMATION

Main Span Type: PONY TRUSS Design: HOWE

Material: WROUGHT IRON

Year Built: 1873CA Altered/Rehabbed: 1960CA

Total Number of Spans: 1 Overall Length: 44

C. CLASSIFICATION OF SERVICE

Functional Classification: LOCAL_RURAL On National Highway System: NO

Direction of Traffic: One lane bridge for 2-directional traffic Number of Lanes On: 1

ADT /Date: 30 / 1988 Waterway Adequacy:

D. GEOMETRIC INFORMATION

Bridge Travelway Width: 15.8 ft Deck Width, Out to Out:: 17.5 ft

Approach Travelway Width: 16 ft Vertical Clearance on Bridge: 0 ft.

Is Bridge Roadway as Wide or Wider Than Approaches?

No, but less than half a foot narrower.

Sidewalk Width Left/Right: 0 ft / 0 ft

Crash Data:

Impact damage to truss lines at several locations proves bridge is hit.

E. STRUCTURAL EVALUATION

Physical Description:

The 44'-long wrought iron Davenport Howe pony truss bridge has a 15.8'-wide deck and is supported on concrete abutments. About 1960, the bridge truss structure was supplemented by the installation of two longitudinal steel beams under the middle portion of the structure, where the floorbeams sit on them. These supplemental beams appear to be located 4' to 5' inside each truss line, placed so that vehicles crossing the bridge might have their wheel lines on or inside the beam lines, which would minimize loads on the trusses. However, there is no means to ensure that vehicles are crossing at the center of the bridge roadway. Because the supplemental beams are located so far inside the truss lines, it is likely that the trusses are subjected to some amount of live load and that the load rating may be listed as higher than actual. It appears likely that the high load rating values may be for the steel beams and not the truss lines. At one corner of the bridge, the truss appears to have been hit by a vehicle; the first three panel lines have bent verticals and the first diagonal and top chord in the end panel are deformed. The truss lines are covered with dirt and debris and the entire structure is corroded. The deck is comprised of transverse timber planking which is deteriorated. The concrete abutments appear to be in satisfactory condition.

Summary of Structural Deficiencies:

Historic bridge serving as traffic railing. Rusted and unrepaired impact damage to truss lines. Paint failed. Superstructure and substructure condition poor. One-lane facility. Wood deck deteriorated.

II. CONFORMANCE WITH STANDARDS

	Actual	Required	Adequate (Y/N)
Load Rating Inventory (Operating)	28T 38T	10**	Yes
Bridge Roadway Width	15.8 ft	18***	No
Number of Lanes	1	2	No
Alignment/Sight Distance	-	-	5-Adequate
Geometric Adequacy	-	-	No

Conformance Comments:

* assume based on engineering judgment.
** 905-2, Note G.
*** 3R <50 ADT rural (905-2).

Status Notes:

III. HISTORICAL SIGNIFICANCE

Historical Rank: Exceptional

Summary of Significance:

One of 6 pre-1875 Davenport Howe truss bridges in the state. Important in history of development of Ohio's remarkable metal truss bridge heritage starting in the late 1850s.

IV. SUMMARY OF PRESERVATION POTENTIAL

Is it prudent and feasible to preserve bridge for its current usage? Dependent of Up-To-Date Data

Does the bridge have any preservation potential, including alternate use? Yes

Summary of Preservation Potential:

The one-lane composite bridge (truss and longitudinal beams added at the center below the floorbeams to strengthen it) is adequate in approach alignment and load-carrying capacity for its local rural classification. It is assumed that the load rating is based on the capacity of the longitudinal beams and the assumption that all live load is going into those beams. The superstructure and substructure are in poor (4) condition. Impact damage to the truss lines (at the center of one truss line and at the east end) demonstrates that the bridge is not performing satisfactorily, and there is no traffic railing or guide rail at the approaches. Paint has failed throughout, and there is active corrosion. The 15.8'-wide bridge roadway width is very nearly matches that the 16'-wide approaches. The reported ADT data (30 vehicles per day and no truck traffic) is not current (over 20 old), and there is new residential development to the east around Lake Lakengren, which may be changing the amount and type of traffic using the crossing.

The bridge has been supplemented by the installation of longitudinal beams, but the configuration would appear to still require that the truss support loadings. Assessing preservation potential needs to address the truss bridge as a stand-alone facility, without consideration of the strength that the longitudinal beams provide. This is required to determine it's feasibility to either remain in place as part of this crossing or have potential for an adaptive use. Which of the several options will prove the most prudent will be dependent on the results of analysis of current functional and operational data, including in depth structural analysis of the load-carrying capacity of the bridge as currently configured, actual ADTs and vehicle types. It is know that there is development in the vicinity, so ADT data may no longer be correct. The operational data will inform the width and capacity needed for this crossing while the structural analysis will define the amount and types of work needed to the truss portion of the bridge to make it adequate.

Forgiving the impact damage, the exceptionally significant wrought iron truss bridge appears to be remarkably complete. Changing the design of the flooring system or widening the bridge would have an adverse effect. If analysis supports that a wider bridge is needed at the crossing, the prudent option would be to relocate the historic bridge to setting where it can be repaired and conserved in its historic configuration, much as other counties like Wayne and Stark have done.

If analysis supports that a one-lane bridge is adequate for a one-lane road, it may be prudent to repair and preserve the bridge at this location if, and only if, an adequate traffic railing like beam guide rail, is placed to (1) protect the historic truss lines and (2) ensure that wheel loads are concentrated over the modern beams and where it is assumed the ratings think load is going. It is anticipated that in depth structural analysis will demonstrate that live loads are presently shared by the beams and the truss. The intent is to ensure that the trusses are not overloaded by restricting migration of wheel loads. Proper installation of the guide rail system will require placement of beams (in order to make proper attachments), and those beams will also provide increased load-carrying capacity thus taking live load out of the truss portion of the bridge. It will also add redundancy. Installation of the traffic railing needs to include cleaning, repairing (more on this coming from Vern) and coating of the historic truss.

Not installing an adequate traffic railing is not prudent as this bridge is too important to remain "unprotected" from further impact damage and overloading.

No build: Leaving the exceptionally significant bridge to continue to rust and be subjected to vehicular impacts is not prudent. Doing nothing will not address the operational and functional issues at the crossing, which is located in an area with increased residential development.

Rehab without adverse effect:	There are several alternates for rehabilitating the historic portion of the bridge, either at this crossing or for an adaptive use at a new location. There are also alternates that will have an adverse effect. The prudence of specific alternates with no adverse effect will be defined by in depth analysis and current operational data. Although the bridge almost matches the width of the approaches, actual traffic counts are needed in order to define width. There is new residential development to the east around Lake Lakengren, which may be changing the amount and type of traffic using the crossing. The bridge cannot be widened without adversely affecting the historic truss. The bridge also needs an adequate traffic railing, and it will claim some roadway width. This could be done without an adverse effect if analysis supports that the current bridge and approach widths are adequate based on very low volume local road and 3R criteria. There are conventional means to make the needed repairs to the damaged truss members, including in situ heat straightening of bent members and economical coating treatments.
Bypass/historic bridge left in place:	The bridge is located on a tangent segment of a very low volume local road. Bypassing the crossing would require acquisition of additional right of way. Given the historic significance of the truss bridge and the ease with which it can be relocated, this option may not be prudent. There are more cost effective ways to preserve and maintain the bridge.
Other:	The wrought iron truss is so significant that it is prudent to remove it from its current location, make the needed repairs and conservation and re-erect it for restricted use, like pedestrian or light vehicles. This has been done successfully with several of the other Davenport Howe pony truss bridges in the state. Will be investigating how difficult to lift and transport truss bridge. Additionally, it could be used as the sidewalk for a new bridge instead of building new ones. This would qualify the needed rehabilitation work for funds associated

V. PRESERVATION RECOMMENDATION

Install beam guide rail, but looking at the flooring system, how going to do that given that the longitudinal beams are so far inside the old LC. Make needed repairs to bent members. Wrought iron rods can be heat straightened, according to Vern Mesler. There are tradesmen in the region who can perform the work.

Committee Recommendation:

-- Install traffic railing inside historic truss lines as soon as possible to prevent overloading and protect the asset.
-- Install signage appropriate for a one-lane bridge.

Date/Committee: