REHABILITATION FEASIBILITY STUDY

DOTTER ROAD BRIDGE PROJECT
T-522 OVER MILL CREEK
ROCKLAND TOWNSHIP, VENANGO COUNTY, PENNSYLVANIA

ER# 2007-6071-121

Prepared for:

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION, DISTRICT 1-0

February 2011

CHRISTINE DAVIS CONSULTANTS, INC.
560 Penn Street, Verona, Pennsylvania 15147
Phone: 412/826-0443 Fax: 412/826-0458

REHABILITATION FEASIBILITY STUDY

DOTTER ROAD BRIDGE PROJECT
T-522 OVER MILL CREEK
ROCKLAND TOWNSHIP, VENANGO COUNTY, PENNSYLVANIA

ER# 2007-6071-121

A cultural resource management report for final submission to:

Bureau for Historic Preservation
Pennsylvania Historical and Museum Commission
P.O. Box 1026, Harrisburg, Pennsylvania 17108-1026

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 DESCRIPTION OF THE PROPOSED UNDERTAKING 2

3.0 AGENCY COORDINATION 3

4.0 PUBLIC INVOLVEMENT 4

5.0 AREA OF POTENTIAL EFFECT 5

6.0 HISTORIC PROPERTIES IDENTIFIED WITHIN THE APE 6

6.1 LEVEL OF EFFORT 6
6.2 DESCRIPTION OF DOTTER ROAD BRIDGE 6
6.3 SIGNIFICANCE OF DOTTER FARM ROAD BRIDGE 7

7.0 ALTERNATIVES ANALYSIS 8

8.0 APPLICATION OF HISTORIC BRIDGE REHABILITATION/ REPLACEMENT GUIDELINES 14

9.0 REFERENCES 21

APPENDICES:

I MAPPING
II PHOTOGRAPHS
III PREVIOUS SECTION 106 CORRESPONDENCE
IV PUBLIC INVOLVEMENT
V COST ANALYSIS-REHABILITATION VS REPLACEMENT

1.0 INTRODUCTION

The purpose of this report is to evaluate the feasibility of rehabilitating the National Register-eligible Dotter Road Bridge, which carries T-522 over Mill Creek in Rockland Township, Venango County, Pennsylvania. Christine Davis Consultants, Inc. (CDC) was retained by **Taylor Engineering** of New Castle, Pennsylvania to prepare this document.

This report has been prepared in compliance with the National Environmental Policy Act of 1969; Section 106 of the National Historic Preservation Act of 1966, as amended, and implementing regulation 36 CFR 800, final rule effective June 17, 1999; the Archaeological and Historic Preservation Act of 1974; Commonwealth of Pennsylvania Acts Numbers 1970-120 and 1978-273; and the Pennsylvania History Code (H.B. 1731).

2.0 DESCRIPTION OF THE PROPOSED UNDERTAKING

The proposed project involves the Dotter Road Bridge over Mill Creek Rockland Township, Venango County, Pennsylvania (Appendix I). The existing bridge is a single-span, single-lane, pin-connected Pratt pony truss (Appendix II). The bridge, built ca. 1885 by the Smith Bridge Company, is 62 feet long and 16.1 feet wide. The Dotter Road Bridge has been determined eligible for the National Register of Historic Places (NRHP). This project is being sponsored by the Pennsylvania Department of Transportation, District 1-0 (PENNDOT) and the Federal Highway Administration (FHWA).

The Dotter Road Bridge is located along an unimproved gravel road in a heavily wooded rural area. It is posted with a weight limit of 6 tons and is considered structurally deficient mainly due to its inadequate load carrying capacity. The superstructure has a National Bridge Inspection Standards (NBIS) rating of 3. Dotter Road (T-522) is classified as a rural, local road and the ADT is 75 vehicles per day.

The purpose and need of the project is to provide a safe crossing at this location that will support all traveling needs for this site. Due to the rural setting of the bridge and in order to allow for the possibility of a rehabilitation, Venango County is permitting a 15-ton weight restriction at this crossing, rather than requiring that all legal loads must be able to cross. Additionally, a single lane structure is considered acceptable. Without a crossing at this location, emergency vehicles, as well as the recreational and local travelers who use the bridge, would have to travel an additional 5 miles to reach local destination points.

3.0 AGENCY COORDINATION

The area of potential effect (APE) was submitted by PENNDOT on October 6, 2008. The Pennsylvania Historic and Museum Commission/Bureau for Historic Preservation (PHMC/BHP) concurred with the boundaries of the APE on October 20, 2008 (Appendix III).

An Abbreviated Historic Resource Survey form for the Dotter Road Bridge Rural District has been prepared. A Phase I Archaeological Survey is being completed by PENNDOT.

4.0 PUBLIC INVOLVEMENT

A public meeting was held on July 28, 2010 to provide information about the Dotter Road Bridge project and to give the public an opportunity to provide any comments about the undertaking. The meeting was advertised in the local newspaper and individual invitations were sent to the Oil Region Alliance (ORA) and Venango County Historical Society, as well as adjacent land owners, local officials, township supervisors, and county commissioners. Feedback Forms were made available to all attendees. Attendees were given the opportunity to submit the form at the end of the meeting or return it by mail. As a result, no forms were returned nor were any comments made during the meeting about historic resources (Appendix IV).

5.0 AREA OF POTENTIAL EFFECT

The area of potential effect (APE) encompasses approximately 3,345 square (sq) meters (m) (36,000 sq feet (ft) or .8 acres) and has been established in accordance with 36 CFR 800.2 and 36 CFR 800.16 (Appendix I). The APE is approximately 300 feet long (east-west limits) and 120 feet wide (north-south limits) and includes the limits of approach work on each side of the bridge. The **Dotter Road Bridge** is the only NRHP-eligible resource within the APE (Appendix I). The rural setting is sparsely developed and forested. One previously recorded archaeological site, Dotter Flats (36VE52), is located in the southwest quadrant of the bridge. Though the site is documented as a prehistoric and historic Native American village, other information is extremely limited, including the exact boundaries. It was never excavated and the NRHP-status is undetermined.

Dotter Road Bridge is located within the Oil Region National Heritage Area though no oil-related buildings or structures remain extant in the nearby vicinity.

6.0 HISTORIC PROPERTIES IDENTIFIED WITHIN THE APE

6.1 LEVEL OF EFFORT

The Secretaryôs Standards and Guidelines for Identification were used to establish appropriate identification efforts. In order to determine the presence of historic properties within the APE, reviews of the NRHP, the Pennsylvania Archaeological Sites Survey (PASS), the Historic American Buildings Survey/Historic American Engineering Records (HABS/HAER), and other regional surveys were conducted for this project. Archival sources including previous studies, county histories, local histories, county atlases, and other documents were used to compile data relating with the Dotter Road Bridge project. A site visit and field survey were conducted to examine all lands associated with the project for any potential historic properties.

One historic resource was identified within the APE: the Dotter Road Bridge. This resource has been previously determined eligible for the NRHP. There are no other historic resources within the APE.

6.2 DESCRIPTION OF DOTTER ROAD BRIDGE

Dotter Road Bridge was constructed ca. 1885 by the Smith Bridge Company of Toledo, Ohio. This single-lane, single-span, pin-connected Pratt pony truss is 62 feet long and 16.1 feet wide and the alignment is skewed. The trusses have built-up upper chords, end posts, and verticals. The lower chords and diagonals are eye bars. The end posts are inclined. The steel superstructure rests on ashlar abutments with flared wingwalls. The original pole

railings remain. The deck has been replaced. This bridge presumably replaces an earlier bridge at the same location and the abutments may be from that bridge.

Smith Bridge Company

When Robert W. Smith, founder of the Smith Bridge Company, began producing pre-cut timber Smith trusses in 1867 and formed the company three years later in 1870. The company was located in Toledo, Ohio. By 1875, the company began to build wrought iron trusses. The company was sold in 1890 and became the Toledo Bridge Company before being sold to the American Bridge Company in 1901 (Commonwealth of Pennsylvania 1986).

6.3 SIGNIFICANCE OF DOTTER FARM ROAD BRIDGE

The Dotter Road Bridge was determined eligible for the NRHP in 2004 and the PHMC officially concurred with this recommendation on December 6, 2006. A review by PENNDOT of the metal trusses bridges in District 1-0 revealed that of the 56 metal thru trusses included in the survey, 39 remain and 21 of those are either eligible for or listed on the NRHP (PENNDOT 2008).

The Dotter Road Bridge retains integrity and the builder is documented. The bridge was built ca. 1885. It is eligible under Criterion C as a historically and technologically significant early example of its technology. The bridge stands out as an early and complete example of its type and design. Adding to its significance is the documentation to the Smith Bridge Company, a regional fabricator of metal truss bridges. There are three other NRHP-eligible bridges constructed by the Smith Bridge Company in Venango County (A. G. Lichtenstein & Associates, Inc. 1998).

7.0 ALTERNATIVES ANALYSIS

NO BUILD ALTERNATIVE

The existing steel pony truss bridge is considered structurally deficient mainly due to its inadequate load carrying capacity. This alternative would maintain the Dotter Road Bridge as it exists and as it would normally be maintained without providing any major long-term improvement. Deterioration of the structural members will continue and result in further loss of load carrying capacity, creating a potential for partial collapse of the bridge deck, and may necessitate closing the bridge to traffic. Maintenance vehicles, fire trucks, and other emergency vehicles will continue to be restricted from using the bridge due to the posted weight limit. The weight limit restriction will be periodically violated, which will cause accelerated deterioration.

For these reasons, the No Build Alternative cannot be considered a prudent or feasible alternative because it does not meet the project need of providing a safe crossing at this location that will support all traveling needs for this site.

REHABILITATION ALTERNATIVE

This alternative considers rehabilitating the existing bridge to improve its load carrying capacity. The existing steel pony truss bridge is posted with a weight limit of six tons based on a structural analysis completed in 2004. The rehabilitation would have to be completed without altering the bridge's proportions, materials, or character defining features in accordance with the

criteria established by the Secretary of the Interior. The condition of the Dotter Road Bridge is summarized below.

Deck

The deck is in fair condition. It was given a Condition Rating of 5 during the National Bridge Inspection Standards (NBIS) inspection completed in 2010. The deck is a 2ò x 4ò nail laminated timber deck. The deck exhibits minor wear although the near left exhibits up to ¼ò loss along the left wheel line and it deflects under loading.

Superstructure

The superstructure is in serious condition. It was given a Condition Rating of 3 during the NBIS inspection completed in 2010. The floorbeams all have 75% of their surface covered with surface rust. The floorbeam hanger bottom plates all show significant deflection at all locations. Floorbeam 1 has the top pushed toward the near abutment and the bottom toward the far (out of plumb 2ò). Floorbeams 2 and 3 have the top toward the far and the bottom toward the near out of plumb 2ò. Approximately 75% of the area of each stringer was covered with surface rust. They had moderate build-up of scale rust to the lower webs and pitting of the lower flanges.

The bottom chords and diagonals around the bottom pins have 50% section loss. All diagonals and bottom sway bracing have scattered light rust and are loose and bent downward. All pins appear frozen due to rust. The paint system is in poor condition with loose and peeling paint.

Substructure

The substructure is in satisfactory condition. It was given a condition rating of 6 during the NBIS inspection completed in 2010. The near abutment sandstone wings are in good condition. The stone abutment stem under the left fascia is pushed out approximately ¾ò towards the stream. The same condition is evident at the right fascia. The backwall stones have been pushed back 2ò No settlement was observed. The footing was below the streambed and could not be inspected. No scour or undermining of the abutment or wings was noted. The far abutment sandstone wings are in good condition. The backwall stones have been pushed back 2ò No settlement was observed. The footing was below the streambed and could not be inspected. No scour or undermining of the abutment or wings was noted.

Channel

The channel is in poor condition. It was given a condition rating of 4 during the NBIS inspection completed in 2010. The channel is misaligned in relation to the bridge. The inlet flow is striking 10ôof the far right wingwall and flow is restricted to an 8ôwidth along the far abutment. No artificial embankment protection is provided for the channel. Vegetation in the flood plain consists of brush and woods in the vicinity of the structure.

Current condition photographs of the Dotter Road Bridge are located in Appendix II.

Load Carrying Capacity Evaluation

The member that controls the current six ton posting is the stringers. The floorbeams are rated at 11 tons and the critical truss member is rated at 9 tons. For a rehabilitation project, Venango County would like the rehabilitated bridge to have a minimum posting of 15 tons to allow for emergency vehicles, school buses, smaller winter maintenance vehicles, etc. Vehicles weighing over 15 tons that could not use the rehabilitated bridge would have to travel approximately 8 miles to detour around the bridge. The rehabilitation would most likely include a lightweight concrete deck to protect the steel below deck level and some type of standard barrier to protect the truss members from vehicle impact.

Due to the age of the structure (111 years old), any rehabilitation option should replace all of the floorbeam hangers as well as all pins in the truss. Based on the current ratings of the existing truss members, the heavier deck and bridge barrier would require the replacement or rehabilitation of a minimum of 60% of the truss members (24 out of 40) in order for each member to rate above the targeted 15 tons.

Rehabilitation of this structure will require replacement of all but 16 members of the existing bridge. The new members will require greater section properties to increase their capacity. The remaining members may also require replacement if adequate connections cannot be made to the new, higher capacity members. Essentially, this alternative will require the complete removal of the historic resource and the construction of a new structure that matches the existing bridge as close as possible. This will be a very expensive undertaking.

The entire structure would need to be blast cleaned (existing members, if any) and painted. Bridge cleaning and painting is also an extremely expensive undertaking due to the required containment and disposal of the blast waste (hazardous or non-hazardous) and other current environmental protection requirements. Due to the crevices between the lower chords, cleaning and painting is difficult and crevice corrosion and rusting would be expected within five years of any rehabilitation.

If existing members can be retained, sampling and testing of the existing steel should be performed to determine its composition and to verify analysis and assumptions. Lastly, a thorough study should be completed to determine how to introduce redundancy to this fracture critical bridge. Introducing redundancy could require additions to the truss that may affect the structure from a historic standpoint.

Geometry and Safety Features Evaluation

The existing bridge deck measures 15.7ô bridge rail to bridge rail. The current bridge railing is 2ò pipe attached to the truss members. The gravel approaches are approximately 10ôin width. The structure is located on a tangent section with a slight positive grade at the near approach and a steep negative grade on the far approach. There is also a curve to the right on the far approach. Dotter Road (T-522) is classified as a rural, local road and the ADT is 75 vehicles per day.

Due to the low ADT, a single lane 15ôbridge deck width is permissible according to current PENNDOT standards and the approach roadway geometry

is adequate (horizontal and vertical curvature, sight distance, etc.). However, the current bridge railing does not meet current safety standards. If a standard, crashworthy traffic barrier was added to each side, the remaining bridge deck width would be less than 15ô(14ôor even less) which does not meet the PENNDOT design criteria for a single lane bridge.

This alternative does not appear to be prudent due to the following reasons:

- Future maintenance costs of the steel truss structure
- The lack of redundancy in the structure
- The excessive cost to essentially remove the existing structure and have fabricated and construct a new steel pony truss that replicates the existing
- The rehabilitated bridgeôs deck width does not meet the PENNDOT Single Lane Bridge Design Criteria for bridge deck width (15ôminimum)

REPLACEMENT OF EXISTING STRUCTURE

The replacement of the bridge on the existing alignment would eliminate the substandard features of the existing bridge (i.e. load carrying capacity and unsafe bridge railing) and meet the needs of the project. The replacement structure will be a single lane bridge which may reuse the existing abutments, if possible. A context sensitive design approach will be utilized. Although the demolition of the existing structure constitutes an adverse effect on the historic structure, this alternative will greatly benefit the traveling public by replacing the deteriorated, structurally deficient bridge with a structure that improves public safety.

8.0 APPLICATION OF HISTORIC BRIDGE REHABILITATION/ REPLACEMENT GUIDELINES

The four-step American Association of State Highway and Transportation Officials (AASHTO) guidelines for the rehabilitation and replacement of historic bridges (AASHTO 2007) has been applied as follows:

STEP 1: UNDERSTANDING WHAT MAKES A BRIDGE HISTORICAL

Historically Significant Members/Components of the Dotter Road Bridge:

- Pin-Connections
- Configuration of Pratt thru truss

Members/Components of the Dotter Road Bridge That Are Not Vital to Retain:

- Deck
- Substructure
- Stringers and floorbeams
- Exact dimension and strength of structural steel
- Existing railings if replaced with compatible ones that meet safety considerations and reflect the original design
- Location

STEP 2: APPLYING STRUCTURAL AND FUNCTIONAL CONSIDERATIONS

Analysis of Structure Condition and Waterway Adequacy

Deck

The deck is in fair condition. It was given a Condition Rating of 5 during the National Bridge Inspection Standards (NBIS) inspection completed in 2010. The deck is a 2ò x 4ònail laminated timber deck. The deck exhibits minor wear

although the near left exhibits up to ¼ò loss along the left wheel line and it deflects under loading.

Superstructure

The superstructure is in serious condition. It was given a Condition Rating of 3 during the NBIS inspection completed in 2010. The floorbeams all have 75% of their surface covered with surface rust. The floorbeam hanger bottom plates all show significant deflection at all locations. Floorbeam 1 has the top pushed toward the near abutment and the bottom toward the far (out of plumb 2ò). Floorbeams 2 and 3 have the top toward the far and the bottom toward the near out of plumb 2ò Approximately 75% of the area of each stringer was covered with surface rust. They had moderate build-up of scale rust to the lower webs and pitting of the lower flanges.

The bottom chords and diagonals around the bottom pins have 50% section loss. All diagonals and bottom sway bracing have scattered light rust and are loose and bent downward. All pins appear frozen due to rust. The paint system is in poor condition with loose and peeling paint.

Substructure

The substructure is in satisfactory condition. It was given a condition rating of 6 during the NBIS inspection completed in 2010. The near abutment sandstone wings are in good condition. The stone abutment stem under the left fascia is pushed out approximately ¾ò towards the stream. The same condition is evident at the right fascia. The backwall stones have been pushed back 2ò No settlement was observed. The footing was below the streambed and could

not be inspected. No scour or undermining of the abutment or wings was noted. The far abutment sandstone wings are in good condition. The backwall stones have been pushed back 2ò No settlement was observed. The footing was below the streambed and could not be inspected. No scour or undermining of the abutment or wings was noted.

Channel

The channel is in poor condition. It was given a condition rating of 4 during the NBIS inspection completed in 2010. The channel is misaligned in relation to the bridge. The inlet flow is striking 10ôof the far right wingwall and flow is restricted to an 8ôwidth along the far abutment. No artificial embankment protection is provided for the channel. Vegetation in the flood plain consists of brush and woods in the vicinity of the structure.

- **NBIS Rating = 3**
- **Waterway opening is adequate**

Analysis of Load-Carrying Capacity

The member that controls the current six ton posting is the stringers. The floorbeams are rated at 11 tons and the critical truss member is rated at 9 tons. For a rehabilitation project, Venango County would like the rehabilitated bridge to have a minimum posting of 15 tons to allow for emergency vehicles, school buses, smaller winter maintenance vehicles, etc. Vehicles weighing over 15 tons that could not use the rehabilitated bridge would have to travel approximately 8 miles to detour around the bridge. The rehabilitation would most likely include a

lightweight concrete deck to protect the steel below deck level and some type of standard barrier to protect the truss members from vehicle impact.

Due to the age of the structure (111 years old), any rehabilitation option should replace all of the floorbeam hangers as well as all pins in the truss. Based on the current ratings of the existing truss members, the heavier deck and bridge barrier would require the replacement or rehabilitation of 60% of the truss members (28 out of 44) in order for each member to rate above the targeted 15 tons.

Rehabilitation of this structure will require replacement of all but 16 members of the existing bridge. The new members will require greater section properties to increase their capacity. The remaining members may also require replacement if adequate connections cannot be made to the new, higher capacity members. Essentially, this alternative will require the complete removal of the historic resource and the construction of a new structure that matches the existing bridge as close as possible. This will be a very expensive undertaking.

The entire structure would need to be blast cleaned (existing members, if any) and painted. Bridge cleaning and painting is also an extremely expensive undertaking due to the required containment and disposal of the blast waste (hazardous or non-hazardous) and other current environmental protection requirements. Due to the crevices between the lower chords, cleaning and painting is difficult and crevice corrosion and rusting would be expected within five years of any rehabilitation.

If existing members can be retained, sampling and testing of the existing steel should be performed to determine its composition and to verify analysis and assumptions. Lastly, a thorough study should be completed to determine how to introduce redundancy to this fracture critical bridge. Introducing redundancy could require additions to the truss that may affect the structure from a historic standpoint.

- **Load carrying capacity is deficient and cannot be improved**

Analysis of Geometry and Safety Features

The existing bridge deck measures 15.7ô bridge rail to bridge rail. The current bridge railing is 2ò pipe attached to the truss members. The gravel approaches are approximately 10ôin width. The structure is located on a tangent section with a slight positive grade at the near approach and a steep negative grade on the far approach. There is also a curve to the right on the far approach. Dotter Road (T-522) is classified as a rural, local road and the ADT is 75 vehicles per day.

Due to the low ADT, a single lane 15ôbridge deck width is permissible according to current PENNDOT standards and the approach roadway geometry is adequate (horizontal and vertical curvature, sight distance, etc.). However, the current bridge railing does not meet current safety standards. If a standard, crashworthy traffic barrier was added to each side, the remaining bridge deck width would be less than 15ô(14ôor even less) which does not meet the PENNDOT design criteria for a single lane bridge.

This alternative does not appear to be prudent and feasible due to the following reasons:

- Future maintenance costs of the steel truss structure
- The lack of redundancy in the structure
- The excessive cost to essentially remove the existing structure and have fabricated and construct a new steel pony truss that replicates the existing
- The rehabilitated bridgeôs deck width does not meet the PennDOT Single Lane Bridge Design Criteria for bridge deck width (15ôminimum)

- **Geometry is sufficient; however, safety features are deficient and cannot be improved in a way that meets the project purpose and need**

STEP 3: HISTORICAL AND ENVIRONMENTAL CONSIDERATIONS

There are no known environmental constraints associated with this project. The required work needed to address the deficiencies in the structure do not exceed what is generally considered as prudent and feasible. Rehabilitation of the structure will not provide for the necessary safety improvements such as providing a crashworthy traffic barrier while maintaining an adequate bridge width. No feasible alternative exists to improve the safety of the travelling public and keep the bridge. The required work would be too cost prohibitive (Appendix V). Since this project involves replacing the bridge with minimal roadway approach work, the project need and purpose are appropriate for this setting.

- **There are no methodologies that achieve the project goals of providing a safe and adequate facility while preserving what makes the bridge historic**

STEP 4: APPLYING THE DECISION-MAKING THRESHOLDS

Feasible and Prudent

The only feasible and prudent alternative that meets the project purpose and need of providing a safe crossing at this location that will support loads up to 15 tons is the Replacement Alternative. The No Build Alternative is not feasible and prudent because it results in severe safety and operational problems. The Rehabilitation Alternative is not feasible and prudent because it results in extraordinary initial and life cycle costs.

Application of Thresholds Based on Aspects of Adequacy

The superstructure of the Dotter Road Bridge has an NBIS rating of 3 and is classified as a Group V bridge. In Group V bridges, the load carrying capacity and superstructure are inadequate but the geometry is adequate. The load carrying capacity is less than design requirements and it is not possible to meet capacity requirements in a cost effective manner. The bridge roadway width is equal to the approaches but, if the railing is improved, it will no longer meet the design requirements. The Dotter Road Bridge is unlikely to have rehabilitation potential because the bridge cannot be improved in a feasible and prudent manner.

9.0 REFERENCES

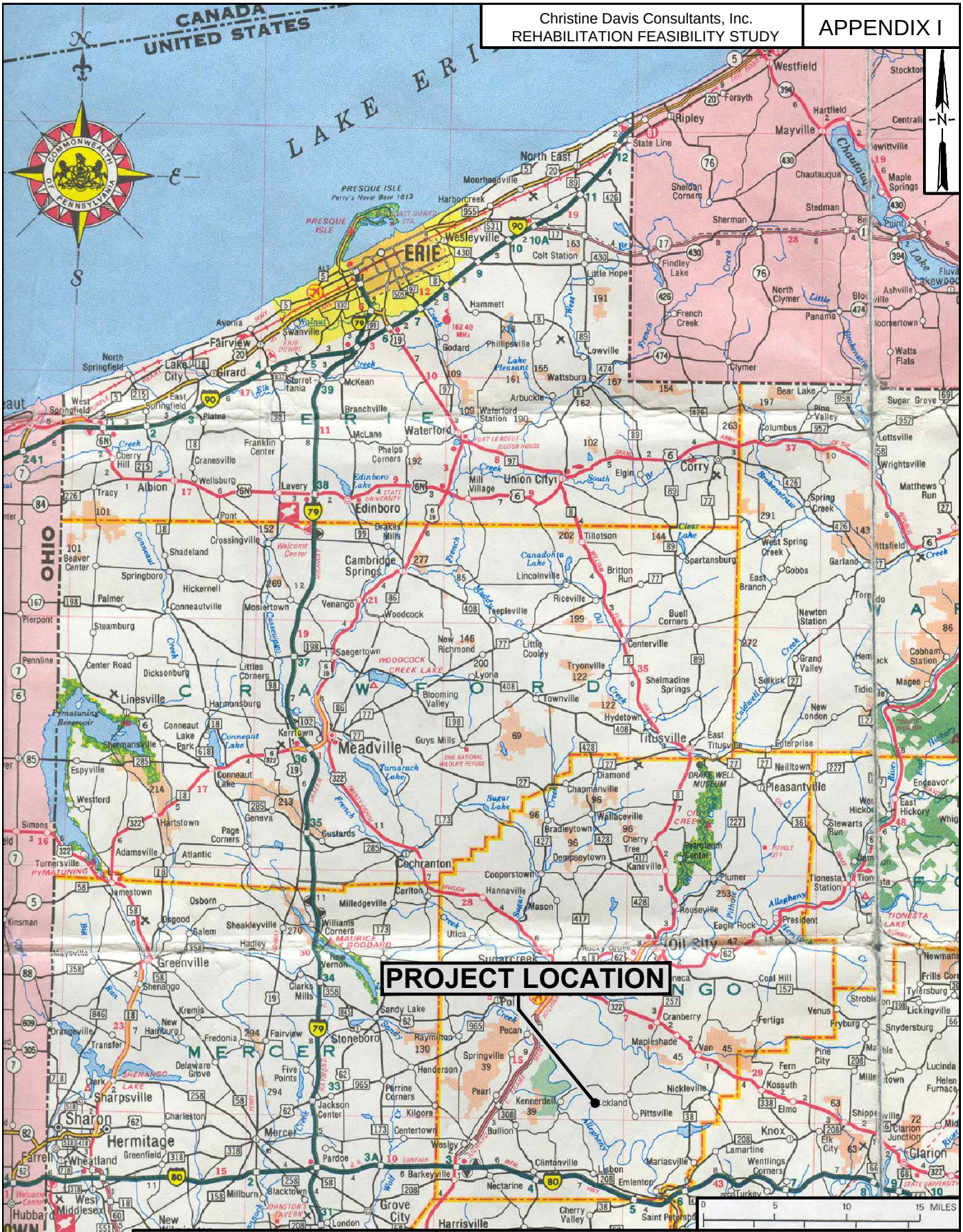
American Association of State Highway and Transportation Officials
2007 *Guidelines for Historic Bridge Rehabilitation and Replacement.*

A. G. Lichtenstein & Associates, Inc.
1998 *Dotter Road Bridge.* Pennsylvania Historic Bridge Inventory & Evaluation form, completed for the Pennsylvania Department of Transportation, Bureau of Environmental Quality.

Commonwealth of Pennsylvania
1986 *Historic Highway Bridges in Pennsylvania.* Pennsylvania Historical and Museum Commission and Pennsylvania Department of Transportation.

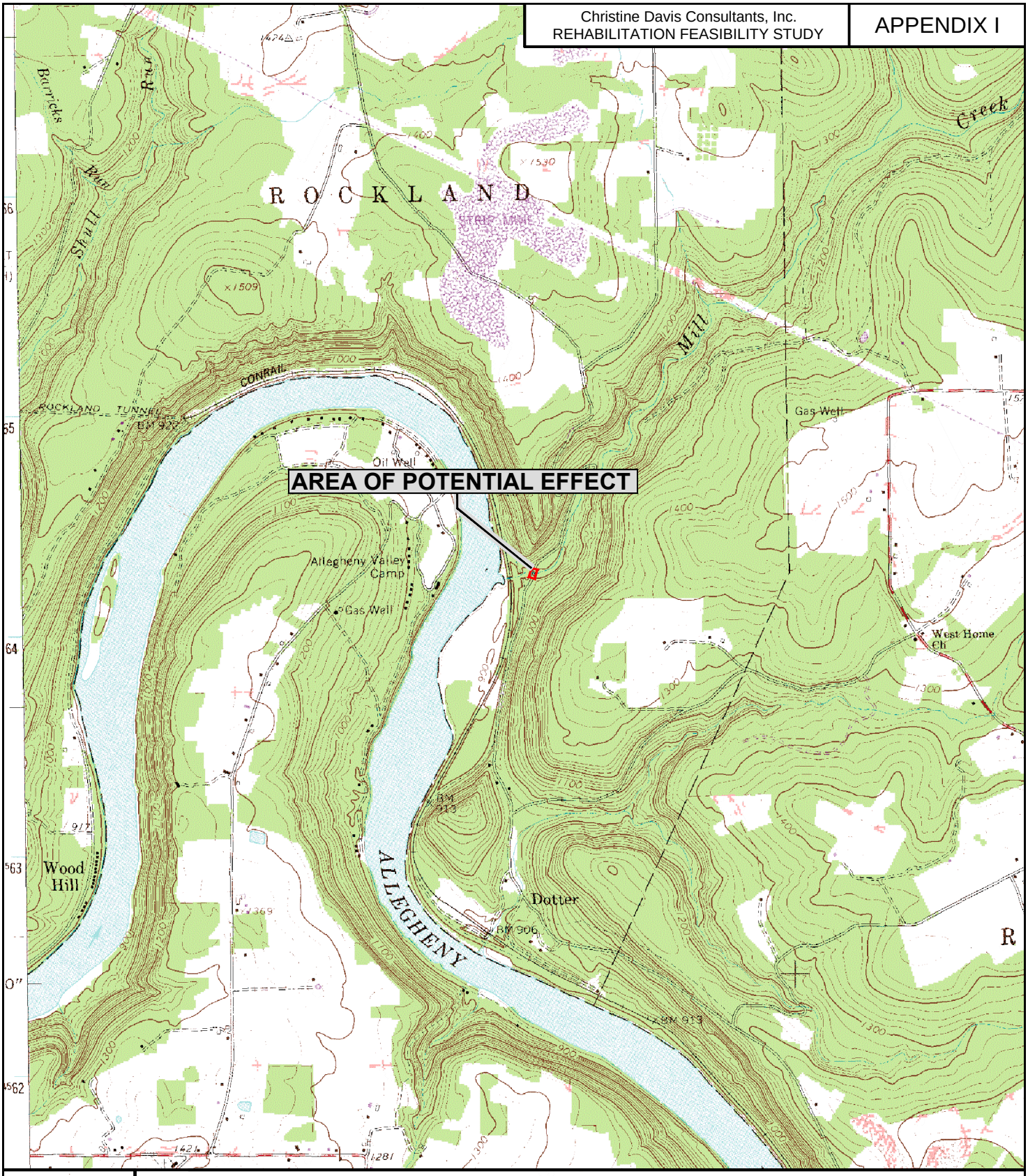
PENNDOT
2008 ñSummary of Metal Truss Bridge Re-Evaluation: 9/4-5/08 and 10/15/08.ò

Appendix I
MAPPING



REFERENCE:
PENNSYLVANIA TRANSPORTATION MAP

Project Location
DOTTER ROAD BRIDGE PROJECT
T-522 OVER MILL CREEK, ER#2007-6071-121
Rockland Township, Venango County, Pennsylvania



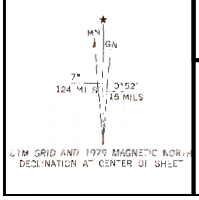
SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

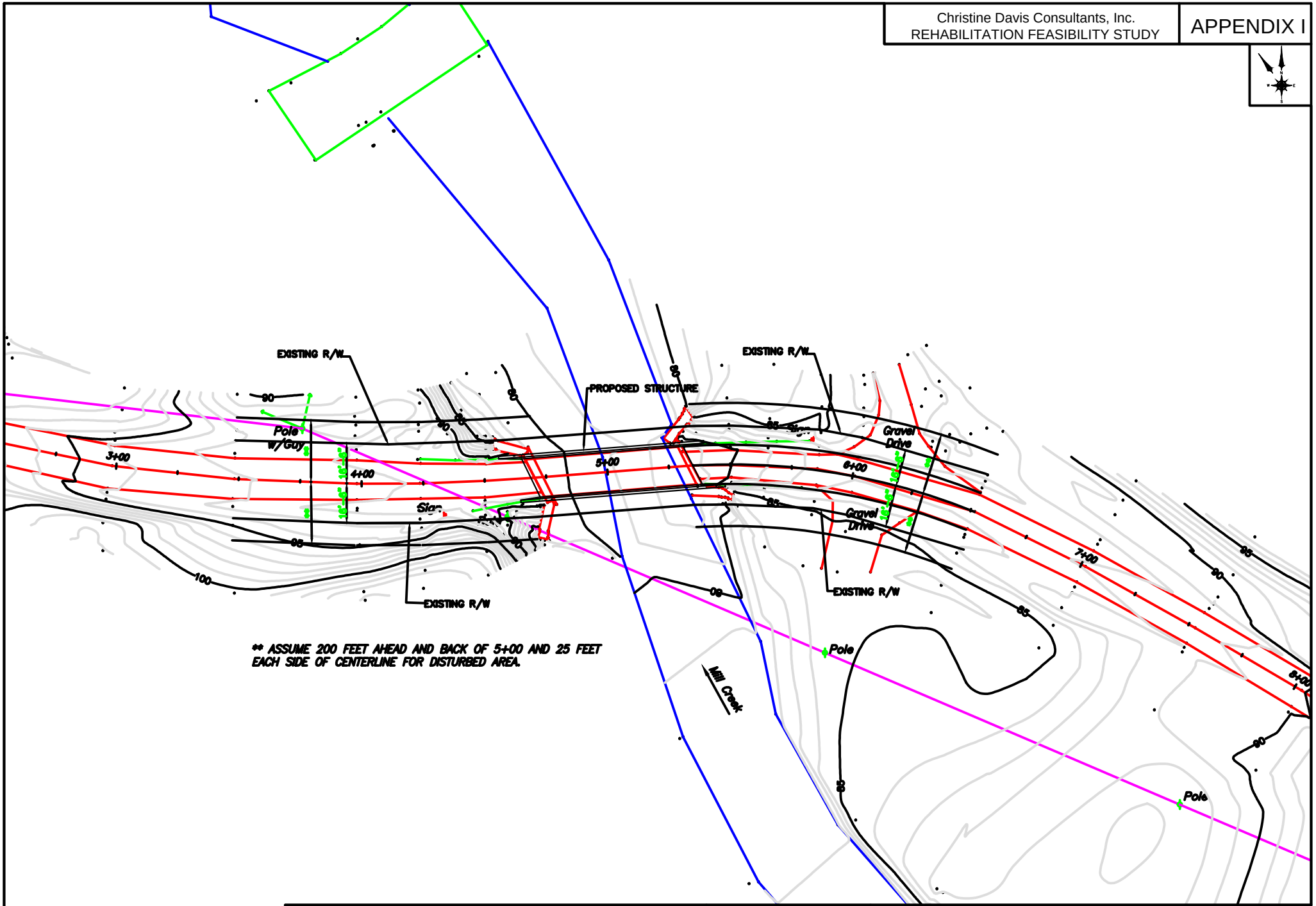
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET



REFERENCE:
USGS 7.5 MINUTE QUADRANGLE
EMLENTON, PA 1963 (PHOTOREVISED 1979)

Area of Potential Effect (APE)
DOTTER ROAD BRIDGE PROJECT
T-522 OVER MILL CREEK, ER#2007-6071-121
Rockland Township, Venango County, Pennsylvania



50' 0 50' 100'

SCALE IN FEET

REFERENCE:
TAYLOR ENGINEERING
2009

Dotter Road Bridge
DOTTER ROAD BRIDGE PROJECT
T-522 OVER MILL CREEK, ER#2007-6071-121
Rockland Township, Venango County, Pennsylvania

Appendix II
PHOTOGRAPHS

PHOTO 1: EAST ELEVATION, LOOKING WEST

PHOTO 2: WEST ELEVATION, LOOKING EAST

PHOTO 3: NORTH APPROACH, LOOKING SOUTH

PHOTO 4: SOUTH APPROACH, LOOKING NORTH

PHOTO 5: FLOORBEAMS, STRINGERS, DIAGNAL BRACING

PHOTO 6: FLOORBEAMS AND HANGERS, NORTH BBUTMENT

PHOTO 7: PIN CONNECTION, HANGER PLATE, SOME REPAIR WORK

Appendix III

PREVIOUS SECTION 106 CORRESPONDENCE

OS-600

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

PENNDOT Cultural Resources Submission

DATE: October 6, 2008

SUBJECT: Venango County, Rockland Township (District 1-0)
Dotter Road Bridge Replacement Project
Area of Potential Effect
ER #: 07-6071-131-B FPN: MPMS#: 02208

TO: Jean H. Cutler, Director
Bureau for Historic Preservation
PA Historical and Museum Commission

FROM: Brian G. Thompson, PE, Director
for Bureau of Design

We are submitting one copy of the proposed area of potential effect (APE) for the above referenced project. The proposed undertaking involves the replacement of the Dotter Road Bridge over Mill Creek. The bridge is eligible for listing in the National Register of Historic Places.

The proposed APE for this project is based on the physical parameters of the undertaking. The APE is approximately 300 feet long (east-west limits) and 120 feet wide (north-south limits). The project is located in a rural, wooded setting. Archaeology will be coordinated under separate submissions.

We request your concurrence that the APE is appropriate for this project. As the project develops, we will consult you if the APE needs to be revised. If you have any questions, please contact David Anthony at 412-429-4861.

Attachment: APE Description and USGS location map

4380/DRA/da

Received
OCT 7 2008
Environmental
Quality

cc: J. D. Bucher, P.E., KB 7N, BOD
K.H. Russell, KB 7W, EQAD (with attachment)
R. Mantione, FHWA (electronic copy)
T. L. Minnich, District 1-0
D.R. Anthony, District 11-0

Will need to address presence or absence of an eligible rural historic district.

Concurrence: Susan Zacher for Date: 10/20/08
Doug C. McLearen, Chief
Archaeology and Compliance Division

Appendix IV
PUBLIC INVOLVEMENT

Frank B. Taylor Engineering

149 Taylor Drive
New Castle, PA 16101
Phone 724-654-6141 Fax 724-654-5827
Consulting - Engineering - Surveying

Frank B. Taylor, P.E., Founder
J. Ross Taylor, P.L.S., Managing Partner
John W. Taylor, Business Manager & Chief of Survey
Mark A. Miller, P.E.

July 16, 2010

Ms. Marilyn Black
Oil Region Alliance
217 Elm Street
Oil City, PA 16301

RE: Dotter Road (T-522) Bridge
Rockland Townships
Venango County
Public Meeting Notification

Dear Ms. Black:

On behalf of our client, Venango County, you are hereby invited to attend a Public Meeting which has been scheduled for Wednesday, July 28, 2010, to discuss the plans for the proposed replacement of the Dotter Road (T-522) Bridge on Township Rd. T-522 in Rockland Townships, Venango County. The meeting will be held at the Rockland Township Fire Hall, 995 Pittsville Road, Kennerdell, PA 16374, from 6:00 PM to 7:00 PM. County and PennDOT representatives will be available to answer questions and receive public comments.

If you have any questions or require additional information, please do not hesitate to contact this office.

Sincerely,
FRANK B. TAYLOR ENGINEERING

William A. Humphrey

William A. Humphrey, P.E.

Frank B. Taylor Engineering

149 Taylor Drive
New Castle, PA 16101
Phone 724-654-6141 Fax 724-654-5827
Consulting - Engineering - Surveying

Frank B. Taylor, P.E., Founder
J. Ross Taylor, P.L.S., Managing Partner
John W. Taylor, Business Manager & Chief of Survey
Mark A. Miller, P.E.

July 16, 2010

Venango County Historical Society
301 S. Park Street
Franklin, PA 16323-1238

RE: Dotter Road (T-522) Bridge
Rockland Townships
Venango County
Public Meeting Notification

To Whom It May Concern:

On behalf of our client, Venango County, you are hereby invited to attend a Public Meeting which has been scheduled for Wednesday, July 28, 2010, to discuss the plans for the proposed replacement of the Dotter Road (T-522) Bridge on Township Rd. T-522 in Rockland Townships, Venango County. The meeting will be held at the Rockland Township Fire Hall, 995 Pittsville Road, Kennerdell, PA 16374, from 6:00 PM to 7:00 PM. County and PennDOT representatives will be available to answer questions and receive public comments.

If you have any questions or require additional information, please do not hesitate to contact this office.

Sincerely,
FRANK B. TAYLOR ENGINEERING

William A. Humphrey

William A. Humphrey, P.E.

PUBLIC NOTICE
NOTICE OF PLANS DISPLAY
VENANGO COUNTY COMMISSIONERS
DOTTER ROAD (T-522) BRIDGE REPLACEMENT PROJECT
over
MILL CREEK
ROCKLAND TOWNSHIP
VENANGO COUNTY

A Public Plans Display will be held on Wednesday, July 28, 2010 from 6:00 to 7:00 PM in the Rockland Township Fire Hall, 995 Pittsville Road, Kennerdell, PA. The focus of the meeting will be a presentation of preliminary alternatives and current engineering and environmental studies for the Dotter Road (T-522) Bridge Replacement Project. Anyone interested in or affected by the project is invited to attend.

The project involves the proposed replacement of the bridge carrying Dotter Road (T-522) over Mill Creek, including minor approach roadway grade adjustments.

The public will have the opportunity to comment on the project and the information presented. Anyone with knowledge of or comments on the historic resources in the area of the proposed project is encouraged to attend. The comments of all individuals, groups and organizations are welcomed. The Venango County Commissioners and the PA Department of Transportation are particularly interested in the identification of historic resources and determining the effect that the project may have on such resources in order to seek ways to avoid, minimize or mitigate any adverse effects on historic resources.

Any persons having special needs or requiring special aid are requested to contact Frank B. Taylor Engineering prior to the meeting. The meeting location is accessible to persons with disabilities. If you require additional information concerning the meeting, please contact Mr. William A. Humphrey, P.E., Project Manager at (724) 654-6141 or write to: Frank B. Taylor Engineering, Mr. William A. Humphrey, P.E., Project Manager, 149 Taylor Drive, New Castle, PA 16101 or the Venango County Commissioners, Denise Jones, County Administrator/Chief Clerk, 1174 Elk Street, Franklin, PA 16323.

When: Wednesday, July 28, 2010, 6:00 PM to 7:00 PM
Where: Rockland Township Fire Hall, 995 Pittsville Road, Kennerdell, PA.

PUBLIC MEETING MINUTES
REPLACEMENT OF DOTTER ROAD (T-522) BRIDGE
JULY 28, 2010

A Public Meeting to discuss alternatives for improvements to the Dotter Road (T-522) Bridge was conducted on July 28, 2010 at the Rockland Township Fire Hall. Four (4) people signed in for the Public Meeting.

Venango County's design consultant, Frank B. Taylor Engineering, was represented by Bill Humphrey. Mr. Humphrey presented a drawing that depicted the existing conditions at the bridge site. He described the condition of the existing bridge, which has been determined eligible for the National Register of Historic Places (NRHP). The bridge type, span length, clear roadway width, and current weight restriction were among the existing bridge features discussed.

The following alternatives were discussed for the project:

1) Do Nothing
2) Build on New Alignment Without Using the Existing Bridge
3) Rehabilitation
4) Replacement (Includes removal of existing bridge)

The positives and negatives for each alternative were discussed by all present. The purpose of the meeting was to obtain input from the public regarding possible improvements to this "eligible" structure.

Ms. Debra Frawley, Greenways & Open Space Coordinator for Venango County, was in attendance. Ms. Frawley has a future stream improvement type project on Mill Creek downstream from the Dotter Road bridge site. She inquired as to the possible availability of excess "fill" material or rock from the Dotter Road bridge construction project for use on her project. She was informed that it is a little early in the process and the actual project scope is still unknown. As the County gets closer to construction, we will contact her to let her now what materials may be available, if any.

Terry Hunsberger, a supervisor for Rockland Township, asked whether or not improvements to some of the sharp bends on Dotter Road could be repaired using similar Federal or State funds. He was told that the funding for these type projects is strictly for bridge improvements.

These minutes represent the Consultant's understanding of the discussions that took place. If any participant has corrections or additions to the minutes, please advise Frank B. Taylor Engineering within five (5) working days of receipt.

William A. Humphrey

William A. Humphrey, P.E.

DOTTER ROAD (T-522) BRIDGE
REPLACEMENT PROJECT
ROCKLAND TOWNSHIP, VENANGO COUNTY

SIGN IN SHEET

Name	Organization	Phone
BILL HUMPHREY	TAYLOR ENGINEERING	724-654-6141
Terry Hunsberger SR	Rockland Twp	814-498-2768
Tom ALCORN	PENNDOT	814-678-7365
Autumn Kelley	Penn DOT	814 678 7393
DEBRA FRAWLEY	Council on GREENWAYS & TRAILS	814-432-4476 Ext. 121

Appendix V

COST ANALYSIS-REHABILITATION VS REPLACMENT

DOTTER ROAD BRIDGE COST ANALYSIS
REHABILITATION VERSUS REPLACEMENT
VENENAGO COUNTY

2/28/2011

DOTTER ROAD BRIDGE - REHABILITATION COST ESTIMATE
15 TON WEIGHT RESTRICTION

ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT PRICE	CONTRACT AMOUNT
CLASS AA CONCRETE	14	CY	$500.00	$7,000.00
CLASS AAA CONCRETE	24	CY	$600.00	$14,400.00
EPOXY CTD. REINFORCEMENT BARS	10000	LB	$1.50	$15,000.00
PIN REPLACEMENT (INCLUDES MATERIAL)	20	EA	$3,000.00	$60,000.00
HANGER REPLACEMENT (INCLUDES MATERIAL)	6	EA	$1,500.00	$9,000.00
FABRICATED STRUCTURAL STEEL (NEW FLOORBEAMS & STRINGERS)	16387	LB	$3.00	$49,161.00
TRUSS MEMBER REPLACEMENT (INCLUDES MATERIAL)	24	EA	$2,500.00	$60,000.00
REMOVAL OF PORTION OF EXISTING BRIDGE	1	LS	$10,000.00	$10,000.00
BLAST CLEAN & PAINT EXIST. STRUCTURAL STEEL	1	LS	$75,000.00	$75,000.00
DISPOSAL OF BRIDGE WASTE	1	LS	$50,000.00	$50,000.00
CONTAINMENT	1	LS	$75,000.00	$75,000.00
WORKER HEALTH AND SAFETY	1	LS	$25,000.00	$25,000.00
			TOTAL	$449,561.00
			15% CONTINGENCY	$67,434.15
		GRAND TOTAL		**$516,995.15** **

** ESTIMATE PREPARED ASSUMING THERE ARE NO PROBLEMS ENCOUNTERED WITH THE EXISTING STEEL MEMBERS TO BE RETAINED

DOTTER ROAD BRIDGE - REPLACEMENT COST ESTIMATE (REUSE EXISTING ABUTMENTS)
NO POSTING

ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT PRICE	CONTRACT AMOUNT
CLASS 3 EXCAVATION	50	CY	$50.00	$2,500.00
CLASS AA CONCRETE	41	CY	$525.00	$21,525.00
CLASS AAA CONCRETE	34	CY	$700.00	$23,800.00
PRESTRESSED CONCRETE SPREAD BOX BEAMS	181	LF	$275.00	$49,775.00
EPOXY CTD. REINFORCEMENT BARS	14361	LB	$1.50	$21,541.50
REMOVAL OF PORTION OF EXISTING BRIDGE	1	LS	$10,000.00	$10,000.00
STRUCTURE MOUNTED GUIDE RAIL	113	LF	$100.00	$11,300.00
			TOTAL	$140,441.50
			15% CONTINGENCY	$21,066.23
		GRAND TOTAL		**$161,507.73**