

Barton & Loguidice

Memo To: Timothy Hunt
Lewis County Highway Department

From: Matthew J. Schooley, P.E.

Re: Lewis County Rails-to-Trails
Condition Assessment Memorandum

Date: November 9, 2022

Project No.: 296.046.001

BACKGROUND:

Lewis County is evaluating the acquisition of five railroad bridges as part of a potential rails-to-trails project. The County has been in discussions with Mohawk, Adirondack & Northern Railroad and Lowville & Beaver Falls Railroad owner Genesee Valley Transportation Co. regarding the acquisition of these bridges. A public information session to be held on November 9, 2022, will present on the potential project, provide preliminary costs, and allow for public comment.

Barton & Loguidice, D.P.C., on behalf of Lewis County, has completed preliminary site inspections of the five bridges. The purpose of this memorandum is to present the current conditions, identify elements requiring rehabilitation, and preliminary rehabilitation cost estimates for the five potential bridges to be acquired.

PROJECT LOCATIONS:

The five railroad bridge are located in 4 towns and villages throughout Lewis and Jefferson County. Refer to the attached site location maps for more detail.

Village of Carthage: A seven-span bridge over the Black River is located in the Village of Carthage, Jefferson County. The bridge is located to the east of State Street over the Black River. The approximate location is 43.97513°N, 75.61242°W.

Village of Castorland: A single-span bridge over a tributary of the Black River is located in the Village of Castorland, Lewis County. The bridge is located to the west of Ridge Road / Railroad Street. The approximate location is 43.88565°N, 75.51050°W.

Town of New Bremen: Two bridges are located in the Town of New Bremen, Lewis County. A two-span bridge over the outlet to Crystal Pond is located to the east of NY-812. The approximate location is 43.83616°N, 75.43997°W. A four-span bridge over the Black River is located to the east of NY-812. The approximate location is 43.82243°N, 75.46315°W.

Village of Lowville: A two-span bridge over Mill Creek is located in the Village of Lowville, Lewis County. The bridge is located to the south of Water Street. The approximate location is 43.78397°N, 75.48622°W.

EXISTING CONDITIONS:

Site visits were completed by Barton & Loguidice, D.P.C. on November 4, 2022 to review the bridges and complete preliminary inspections. See attached inspection photos for additional detail. This structure is located in Lewis County.

Village of Carthage:**Superstructure:**

The existing superstructure is a seven-span 554' long (simple span) dual iron through-girder system with a timber deck. The through-girders are approximately 5'-9" deep and measure 13'-0" between centerlines of webs. The timber deck consists of approximately 8" wide by 12" deep timber ballast with 4" gaps between ballast supported on shelf angles riveted to the interior of the through-girder webs. An 8" National Grid gas line is supported off the fascia of the western through-girder.

The through-girders are in fair condition. The paint system on the through-girders has failed over the majority of the surface area. This failure has led to corrosion and pitting of the exposed iron. Section loss of the through-girders is present but minimal. No areas of significant section loss were noted.

The timber deck is severely deteriorated and in poor condition. More than half of the timbers show visible rot and deterioration, including holes and soft/decayed wood. A number of timbers appear to be held in place only by their connection to the rail tracks.

Substructure:

The north abutment cast-in-place concrete and is in fair condition exhibiting moderate deterioration in the form of spalled and hollow sounding concrete. The abutment has a full width horizontal crack at mid-height and widespread cracking and efflorescence on the face. The bearing areas are not undermined but have similar deterioration (e.g. spalled concrete) to the face of the abutment. The abutment backwall is in fair condition with minimal deterioration.

The south abutment is a stone abutment with a concrete cap and is in fair condition. There are no apparent issues with mortar quality or loss between stones. The concrete cap is in fair condition with minor cracking. The bearing areas are not undermined. The concrete backwall is in fair condition with minor cracking.

From north to south, piers 1-6 are in fair to moderately deteriorated condition. Piers 1-4 and 6 are stone piers with stone and concrete caps. Pier 5 is a concrete pier. The concrete caps of piers 1 and 2 are in fair condition with minor cracking and spalling. The stone caps of piers 3, 4 and 6 are in fair condition with no visible cracking. The concrete cap for pier 5 is in fair condition with moderate cracking and minor spalling. The bearing areas are not undermined at any pier locations. The stone and mortar of piers 1-4 and 6 are in fair condition with no visible mortar loss or stone displacement. The concrete stem of pier 5 exhibits moderate deterioration with widespread cracking and efflorescence, and 2"-6" deep spalling along the entirety of the waterline.

The bearings at the north abutment, piers 1, 2 and 5, and the south abutment are plates bearing directly on the concrete seats/caps. These bearings are in fair condition. The paint system has failed over most of the surface area but little corrosion has occurred. The movement capacity of these bearings is unknown. The bearings at piers 3, 4 and 6 are plates on timber. These bearings are in fair condition. The plates are in similar condition to the other piers. The condition of the timbers is similar condition to the timber decking, exhibiting dry rot and decay.

Known settlement of piers 3 and 4 has occurred at this site. These piers have settled approximately 12". The cause of settlement is unknown but most likely attributable to undermining and scour from the Black River's flow, or due to the decay of a timber cribbing support system, should one exist.

There is no evidence of scour at the abutments. The scour condition at the piers could not be inspected at this time. It is unknown if scour is occurring at the piers, but as discussed above, could be the cause of the observed pier settlement.

It is unknown whether the substructures bear on piles or spread footings.

Village of Castorland:

Superstructure:

The existing superstructure is a 55' long single-span dual iron through-girder system with a timber deck. The through-girders are approximately 5'-0" deep and measure 14'-0" between centerlines of webs. The timber deck consists of approximately 8" wide by 12" deep timber ballast with 4" gaps between ballast supported on shelf angles riveted to the interior of the through-girder webs.

The through-girders are in fair condition. The paint system on the through-girders has failed over the majority of the surface area. This failure has led to corrosion and pitting of the exposed iron. Section loss of the through-girders is present but minimal. No areas of significant section loss were noted.

The timber deck is in fair to poor condition. Approximately one quarter of the timbers exhibit visible dry rot and deterioration, including holes and soft/decayed wood.

Substructure:

The north abutment is in fair condition. The north abutment is a stone abutment with a concrete cap and concrete wingwalls. Mortar has failed and is missing from approximately one quarter of the masonry joints. The concrete cap is in poor condition with 2"-6" deep spalling. The bearing areas are not undermined, but continued concrete spalling will result in undermining. The concrete backwall is in poor condition with similar spalling to the concrete cap. The concrete wingwalls are in fair condition with spalling and cracking.

The south abutment is in fair condition. The south abutment is a stone abutment with a concrete cap and concrete wingwalls. Mortar has failed and is missing from approximately one third of the masonry joints. The concrete cap is in fair condition with spalling and cracking. The bearing areas are not undermined.

The concrete backwall is in fair condition with minor cracking. The concrete wingwalls are in fair condition with spalling and cracking.

The bearings at the north and south abutments are plates bearing directly on the concrete seats/caps. These bearings are in fair condition. The paint system has failed over most of the surface area but little corrosion has occurred. The movement capacity of these bearings is unknown.

There is no evidence of scour at the abutments.

It is unknown whether the substructures bear on piles or spread footings.

Town of New Bremen (Crystal Pond):

Superstructure:

The existing superstructure is a two-span 76' long (simple span) multiple iron girder system with a timber deck. The girders are approximately 4'-6" deep and measure 5'-0" between centerlines of webs. The timber deck consists of approximately 8" wide by 12" deep timber ballast with 4" gaps between ballast supported on the girder top flanges.

The girders are in fair condition. The paint system on the girders has failed over the majority of the surface area. This failure has led to corrosion and pitting of the exposed iron. Section loss of the girders is present but minimal. No areas of significant section loss were noted.

The timber deck is in fair condition. Approximately one quarter of the timbers exhibit visible dry rot and deterioration, including holes and soft/decayed wood.

Substructure:

The north abutment is cast-in-place concrete and is in fair condition. The stem is in fair condition with minor spalling and cracking on the face of the abutment and an open crack (up to 3") on the bridge seat immediately in front of the bearing location. The bearing areas do not appear to be undermined by the open crack on the bridge seat. The concrete backwall is in fair condition with minor cracking.

The south abutment is cast-in-place concrete and is in fair condition. The stem exhibits moderate deterioration with cracking and deep spalling on the face of the abutment concentrated at the water line. The bearing areas may be undermined by the deep spalling at the face of the abutment. The concrete backwall is in fair condition with minor cracking.

The pier is cast-in-place concrete and is in fair condition. The pier exhibits moderate deterioration with spalling at the upstream and downstream noses and minor cracking throughout. The bearing areas are not undermined.

The bearings at the north abutment, pier, and south abutment are plates bearing directly on the concrete seats/caps. The bearings are in fair condition. The paint system has failed over most of the surface area but little corrosion has occurred. The movement capacity of these bearings is unknown.

The scour condition at the abutments and pier could not be inspected at this time. It is unknown if scour is occurring at the abutments or pier. A spillway is located immediately downstream of the crossing.

It is unknown whether the substructures bear on piles or spread footings.

Village of New Bremen (Black River):

Superstructure:

The existing superstructure is a four-span 284' long (simple span) bridge. The westernmost span is a dual iron through-girder system with a timber deck. The remaining spans are iron trusses with timber decking. The through-girders are approximately 6'-0" deep and measure 14'-6" between centerlines of webs. The trusses are approximately 25'-0" tall and measure 15'-3" between centerlines of truss. The timber deck consists of approximately 8" wide by 12" deep timber ballast with 4" gaps between ballast supported on the top flanges of interior longitudinal stringers.

The through-girders are in fair condition. The paint system on the through-girders has failed over more than one quarter of the surface area. This failure has led to corrosion and pitting of the exposed iron. Section loss of the through-girders is present but minimal. No areas of significant section loss were noted.

The truss members are in fair condition. The paint system on the truss members has failed over the majority of the surface area. This failure has led to corrosion and pitting of the exposed iron. Section loss of the truss members is present but minimal. No areas of significant section loss were noted.

The timber deck is severely deteriorated and in poor condition. More than half of the timbers exhibit dry rot and deterioration, including holes and soft/decayed wood. A number of timbers appear to be held in place only by their connection to the rail tracks.

Substructure:

The west abutment is a cast-in-place concrete abutment with concrete wingwalls and is in fair condition. The abutment stem and wingwalls exhibit minor surficial horizontal and vertical cracking and minor efflorescence. The bearing areas are not undermined. The concrete backwall is in fair condition with minor spalling.

The east abutment is a cast-in-place concrete abutment with concrete u-walls and is in poor condition. The abutment stem is in poor condition with deep spalling through the middle height of the stem and the south corner of the u-wall. The bearing area near the south corner of the abutment may be undermined by the deep spalling at this location. The concrete backwall is in fair to poor condition with cracking and spalling.

Piers 1-3, numbered east to east, are cast-in-place concrete and are in fair to poor condition. Pier 1 is a circular pier. Piers 2-3 are rectangular. Piers 1-3 are in fair to poor condition with cracking, efflorescence, and spalling along the seat locations and water line. The bearing area at pier 1 is undermined by spalling along more than half the perimeter of the pier. The bearing areas are not undermined at piers 2-3.

The bearings at the west abutment and piers 3 for the through-girders are plate bearings. The bearings at piers 2, 3 and the east abutment for the truss are rocker and plate bearings. These bearings are in fair condition. The paint system has failed over most of the surface area but little corrosion has occurred. The movement capacity of these bearings is unknown. The bearing at pier 1 is incorporated into the mechanical components that were formerly used to rotate the span about pier 1. The bearing is in fair condition. The paint system has failed over most of the surface area but little corrosion has occurred. The movement capacity of the bearing is unknown.

There is no evidence of scour at the west abutment. The toe of the footing at the east abutment is exposed above grade over the full length of the abutment. The scour condition at the piers could not be inspected at this time. It is unknown if scour is occurring at the piers.

It is unknown whether the substructures bear on piles or spread footings.

Village of Lowville:

Superstructure:

The existing superstructure is a two-span 160' long (simple span) dual iron girder system with a timber deck. The north span crosses Water Street. The girders for the northern span are approximately 5'-0" deep and measure 7'-0" between centerlines of webs. The south span crosses Mill Creek. The girders for the southern span are approximately 8'-0" deep and measure 8'-6" between centerlines of webs. The timber deck consists of approximately 8" wide by 12" deep timber ballast with 4" gaps between ballast supported on the top flanges of the girders. A National Grid gas line is supported off the western fascia.

The girders are in fair condition. The paint system on the girders has failed over the majority of the surface area. This failure has led to corrosion and pitting of the exposed iron. Section loss of the girders is present but minimal. No areas of significant section loss were noted.

The timber deck is in fair condition. Less than one quarter of the timbers exhibit dry rot and deterioration, including holes and soft/decayed wood.

Substructure:

The north abutment is a stone abutment with a concrete cap and is in fair condition. There are no apparent issues with mortar quality or loss between stones. The concrete cap is in fair condition with cracking and spalling. The bearing areas are not undermined. The concrete backwall is in fair to moderately deteriorated condition with cracking and spalling.

The south abutment is a concrete abutment constructed in front of a stone u-wall functioning as a backwall, and is in fair to poor condition. The stem of the concrete abutment is in poor condition, with 2"-6" deep spalling over more than half of the surface area. The concrete pedestals are in fair condition with minor cracking. The bearing areas are not undermined. The stone u-wall is in fair condition. There are no apparent issues with mortar quality or loss between stones.

The pier is a stone base with a 6' deep concrete cap and concrete pedestals, and is in fair condition. The stone base is in fair condition. There are no apparent issues with mortar quality or loss between stones. The concrete cap is in fair condition with spalling, cracking, and efflorescence. The concrete pedestals are in fair condition with spalling, cracking, and efflorescence. The bearing areas are not undermined.

The bearings at the north abutment are plates bearing directly on the concrete seat. These bearings are in fair condition. The paint system has failed over most of the surface area but little corrosion has occurred. The movement capacity of these bearings is unknown. The bearings at the south abutment and the pier are rocker/slider type bearings. These bearings are in fair condition. The paint system has failed over most of the surface area but little corrosion has occurred. The movement capacity of these bearings is unknown.

It is unknown whether the substructures bear on piles or spread footings. Based on exposed bedrock at this location it is anticipated that the substructures bear on footings on bedrock.

ANTICIPATED REHABILITATION EFFORTS:

The bridges will require varying degrees of rehabilitation extend their service life. From the standpoint of converting them to recreational crossings as part of the proposed pedestrian trail, the structures have adequate capacity to support the proposed use.

From the overall condition assessment for the structures as described above, the minimum level of effort required to upgrade the structures to carry the pedestrian traffic would consist of replacing the timber deck system and providing pedestrian rail for all sites, spot repairs to the concrete and stone masonry substructures at various locations and upgrades to the various bearing seats as described below.

Anticipated rehabilitation efforts for each bridge are summarized below:

Village of Carthage:

Superstructure:

Retaining the existing girders is proposed. The girders are in fair condition and the design capacity of the girders, intended for train loading, is anticipated to be much more than required for the pedestrian trail.

Painting of the superstructure is not proposed. Plating and element specific repair of the girders is not proposed. The girders are in fair condition with minimal section loss. The conversion of the bridge to carry a pedestrian trail is not anticipated to accelerate the rate of section loss.

Replacement of the timber deck system is proposed. The existing timber deck will need to be removed and replaced to meet the needs of the proposed trail.

Installation of pedestrian rail is proposed. The bridge will need to be retrofit with pedestrian rail to meet the needs of the proposed trail.

Substructure:

Class A and D concrete repair is proposed at the north abutment. This work is needed to address existing cracking and spalling to extend the service life of the existing abutment. It is anticipated that this work can be performed from the bank and will not require cofferdams or water access.

No concrete repair is proposed at the south abutment and piers 1-4 and 6. Existing deterioration is minimal and does not require rehabilitative work to extend the service life.

Class A and D concrete repair is proposed at the pier 5. This work is needed to address existing cracking and spalling to extend the service life of the existing pier. It is anticipated that this work will require cofferdams and water access.

No alteration of the bearing conditions is proposed at the abutments or piers 1, 2 and 5. The existing bearings are in fair condition and does not require rehabilitative work to extend the service life.

Replacement of the deteriorated timber bearings is proposed at piers 3, 4 and 6. A steel bolster or similar element will need to be considered to maintain existing geometry. Structural lifting will be required for this work. It is anticipated that structural lifting can be completed from the existing bridge seat and this will not require cofferdams or water access.

Installation of grout bags is proposed at the base of piers 3 and 4 as a preventative measure against further settlement of these piers. The cause of settlement at these locations is unknown but may be related to scour. Installation of grout bags as a preventative measure against settlement or corrective measure against scour will extend the service life of the piers.

Village of Castorland:

Superstructure:

Retaining the existing girders is proposed. The girders are in fair condition and the design capacity of the girders, intended for train loading, is anticipated to be much more than required for the pedestrian trail.

Painting of the superstructure is not proposed. Plating and element specific repair of the girders is not proposed. The girders are in fair condition with minimal section loss. The conversion of the bridge to carry a pedestrian trail is not anticipated to accelerate the rate of section loss.

Replacement of the timber deck system is proposed. The existing timber deck will need to be removed and replaced to meet the needs of the proposed trail.

Installation of pedestrian rail is proposed. The bridge will need to be retrofit with pedestrian rail to meet the needs of the proposed trail.

Substructure:

Class A and D concrete repair is proposed for the abutment concrete caps and wingwalls. This work is needed to address existing cracking and spalling, and eliminate potential bearing undermining to extend the service life of the existing abutments. It is anticipated that this work can be performed from the bank and will not require cofferdams or water access.

Tuck point and pressure grouting repair is proposed for the stone abutments. This work is needed to eliminate existing voids to extend the service life of the existing abutments. It is anticipated that this work can be performed from the bank and will not require cofferdams or water access.

No alteration of the bearing conditions is proposed. The existing bearings are in fair condition and do not require rehabilitative work to extend the service life.

Installation of bank protection is not proposed. There is no evidence of scour at the site to require this work.

Town of New Bremen (Crystal Pond):**Superstructure:**

Retaining the existing girders is proposed. The girders are in fair condition and the design capacity of the girders, intended for train loading, is anticipated to be much more than required for the pedestrian trail.

Painting of the superstructure is not proposed. Plating and element specific repair of the girders is not proposed. The girders are in fair condition with minimal section loss. The conversion of the bridge to carry a pedestrian trail is not anticipated to accelerate the rate of section loss.

Replacement of the timber deck system is proposed. The existing timber deck will need to be removed and replaced to meet the needs of the proposed trail.

Installation of pedestrian rail is proposed. The bridge will need to be retrofit with pedestrian rail to meet the needs of the proposed trail.

Substructure:

Class A and D concrete repair is proposed for the abutments and pier. This work is needed to address existing cracking and spalling, and eliminate potential bearing undermining to extend the service life of the existing substructures. It is anticipated that this work will require cofferdams or water access.

No alteration of the bearing conditions is proposed. The existing bearings are in fair condition and do not require rehabilitative work to extend the service life.

Town of New Bremen (Black River):

Superstructure:

Retaining the existing trusses and girders is proposed. The trusses and girders are in fair condition and the design capacity of the members, intended for train loading, is anticipated to be much more than required for the pedestrian trail.

Painting of the superstructure is not proposed. Plating and element specific repair of the trusses and girders is not proposed. The members are in fair condition with minimal section loss. The conversion of the bridge to carry a pedestrian trail is not anticipated to accelerate the rate of section loss.

Replacement of the timber deck system is proposed. The existing timber deck will need to be removed and replaced to meet the needs of the proposed trail.

Installation of pedestrian rail is proposed. The bridge will need to be retrofit with pedestrian rail to meet the needs of the proposed trail.

Substructure:

No concrete repair is proposed at the west abutment. Existing deterioration is minimal and does not require rehabilitative work to extend the service life.

Class A and D concrete repair is proposed at the east abutment and piers 1-3. This work is needed to address existing cracking and spalling, and eliminate potential bearing undermining to extend the service life of the existing substructures. It is anticipated that this work will require cofferdams or water access.

No alteration of the bearing conditions is proposed. The existing bearings are in fair condition and do not require rehabilitative work to extend the service life.

Installation of stone bank protection is proposed at the east abutment. Bank protection is needed to address the exposed footing toe at this location and prevent further scour.

Village of Lowville:

Superstructure:

Retaining the existing girders is proposed. The girders are in fair condition and the design capacity of the girders, intended for train loading, is anticipated to be much more than required for the pedestrian trail.

Painting of the superstructure is not proposed. Plating and element specific repair of the girders is not proposed. The girders are in fair condition with minimal section loss. The conversion of the bridge to carry a pedestrian trail is not anticipated to accelerate the rate of section loss.

Replacement of the timber deck system is proposed. The existing timber deck will need to be removed and replaced to meet the needs of the proposed trail.

Installation of pedestrian rail is proposed. The bridge will need to be retrofit with pedestrian rail to meet the needs of the proposed trail.

Substructure:

Class A and D concrete repair is proposed at the south abutment, and the north abutment and pier concrete caps. This work is needed to address existing cracking and spalling to extend the service life of the existing substructures. It is anticipated that this work can be performed from the bank or work platforms and will not require cofferdams or water access.

Class D concrete repair is proposed pier pedestals. This work is needed to address existing cracking and spalling and eliminate potential bearing undermining to extend the service life of the existing structure.

No concrete repair is proposed for the south abutment pedestals. The existing pedestals are in fair condition and do not require rehabilitative work to extend the service life.

No alteration of the bearing conditions is proposed. The existing bearings are in fair condition and do not require rehabilitative work to extend the service life.

PRELIMINARY COST ESTIMATES:

Based on the condition and proposed repairs discussed above it is our recommendation to pass on the acquisition of the Carthage site due to the rehabilitation cost to upgrade the structure for pedestrian use (see below).

The remaining structures are viable options for acquisition but will require, at a minimum, upgrades to the deck surface and the addition of pedestrian railing. The proposed substructure repairs will extend the service life but are not necessarily required as immediate repairs to open the crossings. The County may complete substructure repairs over time as funding becomes available. The estimated cost to complete the deck repairs for the four sites (excluding Carthage) is \$1,230,000. A breakdown of cost is provided below. Refer to the attached cost workups for additional detail.

As an alternative deck surface replacement option, the County may consider replacing the existing timber ballast with steel deck pans with concrete infill utilizing County forces should this self-help option be determined to be more cost effective.

Village of Carthage:

Superstructure:

Estimated cost of superstructure rehabilitation is \$1,235,000. This cost includes removal and replacement of the deck system, and retrofit of the structure to carry pedestrian rail.

Substructure:

Estimated cost of substructure rehabilitation is \$285,000. This cost includes Class A and D concrete repair, bearing replacement, structural lifting, grout bags, cofferdams, and water access.

Total:

The total estimated cost of bridge rehabilitation is \$1,520,000.

Village of Castorland:

Superstructure:

Estimated cost of superstructure rehabilitation is \$125,000. This cost includes removal and replacement of the deck system, and retrofit of the structure to carry pedestrian rail.

Substructure:

Estimated cost of substructure rehabilitation is \$85,000. This cost includes Class A and D concrete repair and masonry repair.

Total:

The total estimated cost of bridge rehabilitation is \$210,000.

Town of New Bremen (Crystal Pond):

Superstructure:

Estimated cost of superstructure rehabilitation is \$165,000. This cost includes removal and replacement of the deck system, and retrofit of the structure to carry pedestrian rail.

Substructure:

Estimated cost of substructure rehabilitation is \$115,000. This cost includes Class A and D concrete repair, cofferdams, and water access.

Total:

The total estimated cost of bridge rehabilitation is \$280,000.

Town of New Bremen (Black River):

Superstructure:

Estimated cost of superstructure rehabilitation is \$630,000. This cost includes removal and replacement of the deck system, and retrofit of the structure to carry pedestrian rail.

Substructure:

Estimated cost of substructure rehabilitation is \$315,000. This cost includes Class A and D concrete repair, stone bank protection, cofferdams, and water access.

Total:

The total estimated cost of bridge rehabilitation is \$945,000.

Village of Lowville:

Superstructure:

Estimated cost of superstructure rehabilitation is \$310,000. This cost includes removal and replacement of the deck system, and retrofit of the structure to carry pedestrian rail.

Substructure:

Estimated cost of substructure rehabilitation is \$125,000. This cost includes Class A and D concrete repair.

Total:

The total estimated cost of bridge rehabilitation is \$435,000.

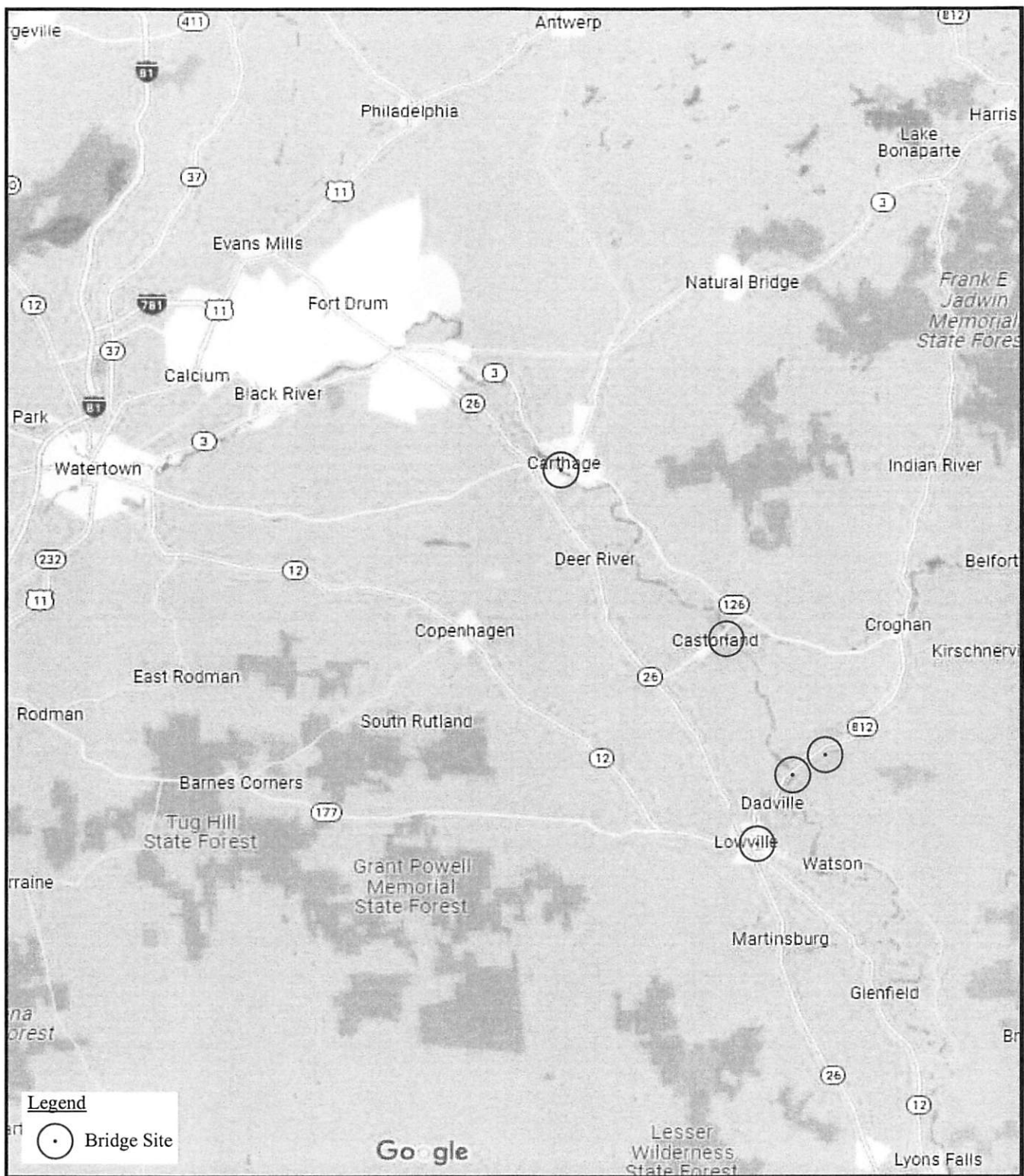
Attachments:

Appendix A: Location Maps

Appendix B: Photo Log

Appendix C: Preliminary Estimate

Appendix A
Site Location Maps

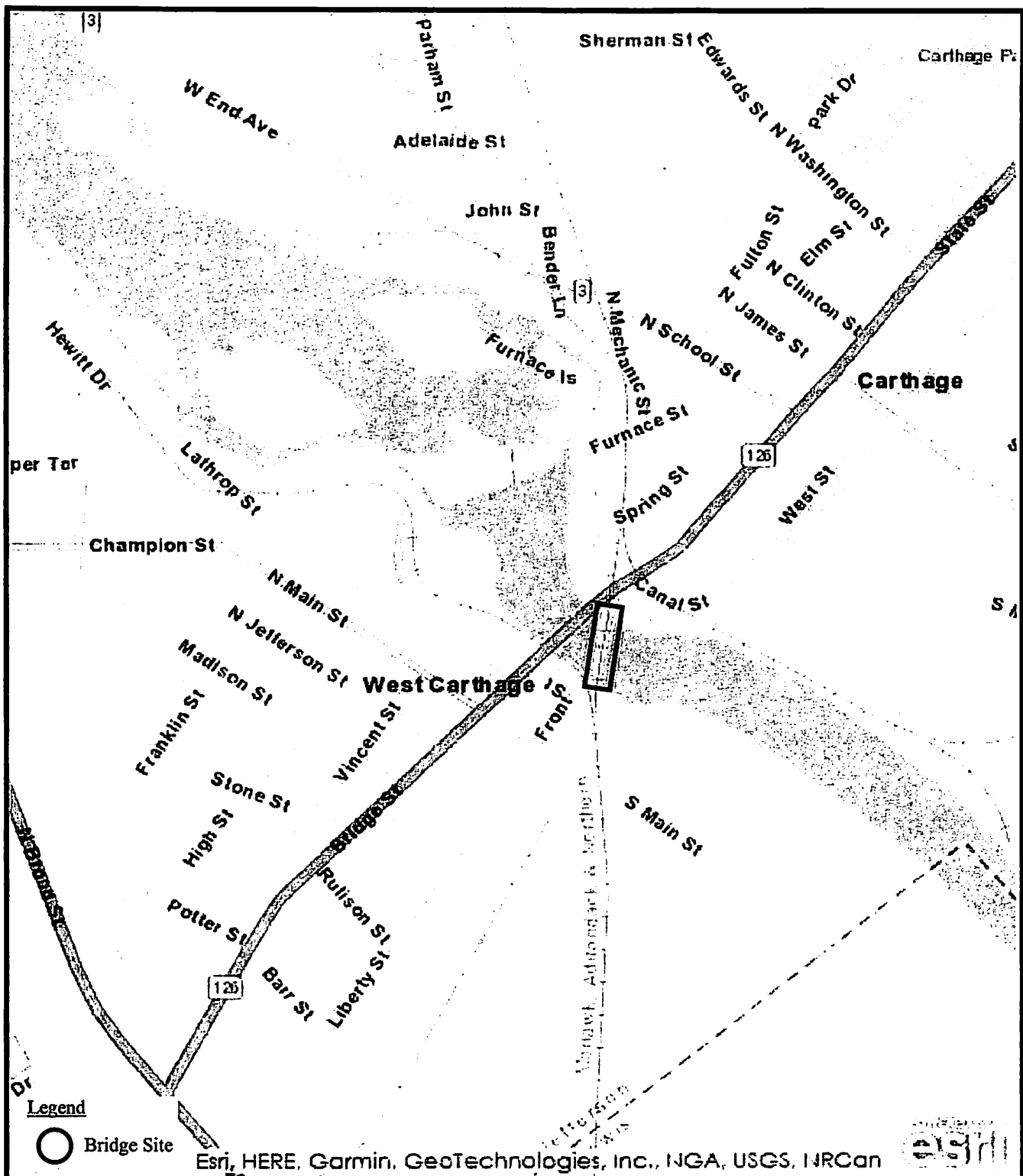


RAILS-TO-TRAILS

Bridge Location Map

Lewis & Jefferson County, New York

**Barton
& Loguidice, D.P.C.**

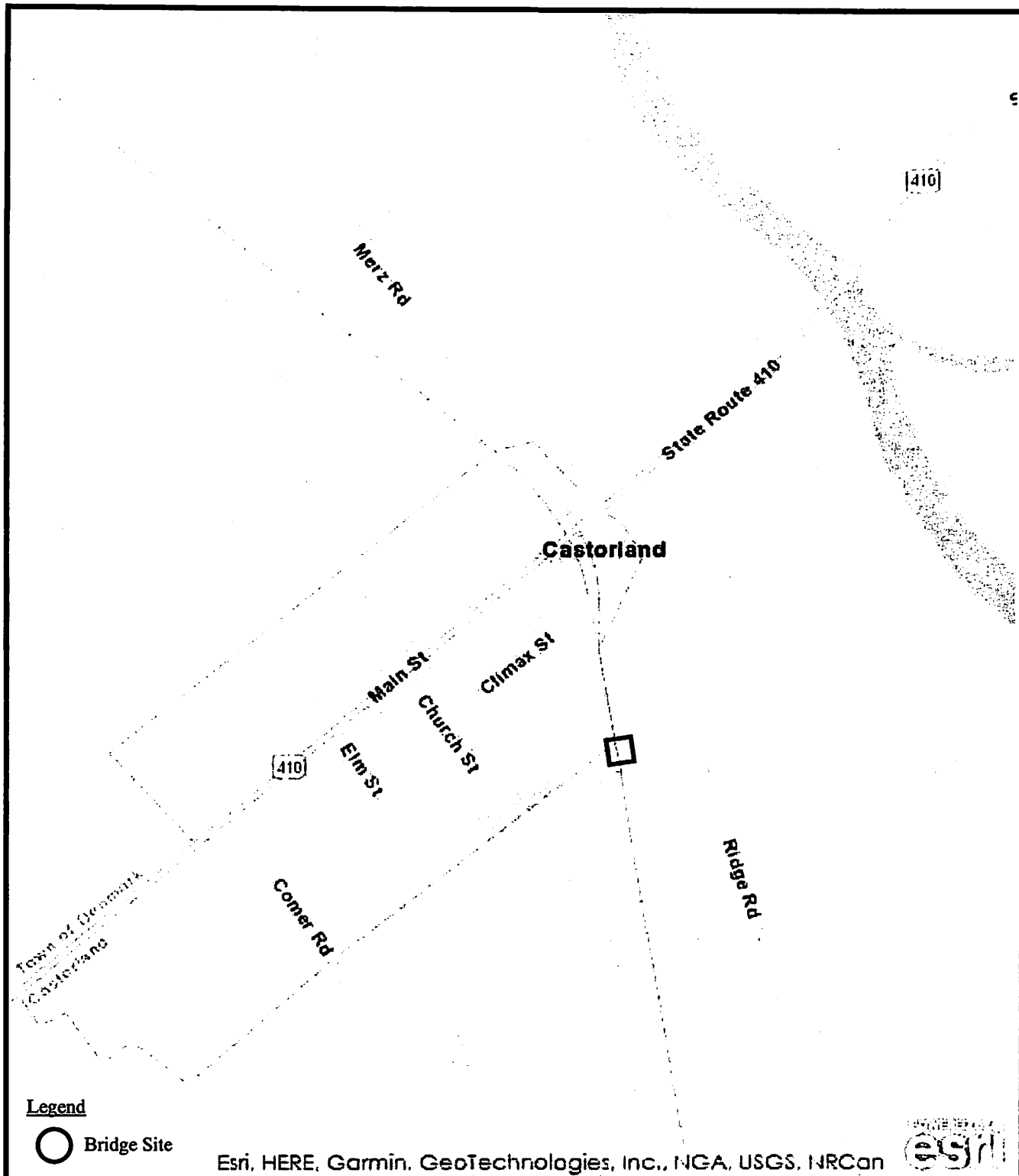


RAILS-TO-TRAILS

Village of Carthage

Jefferson County, New York

**Barton
& Loguidice, D.P.C.**

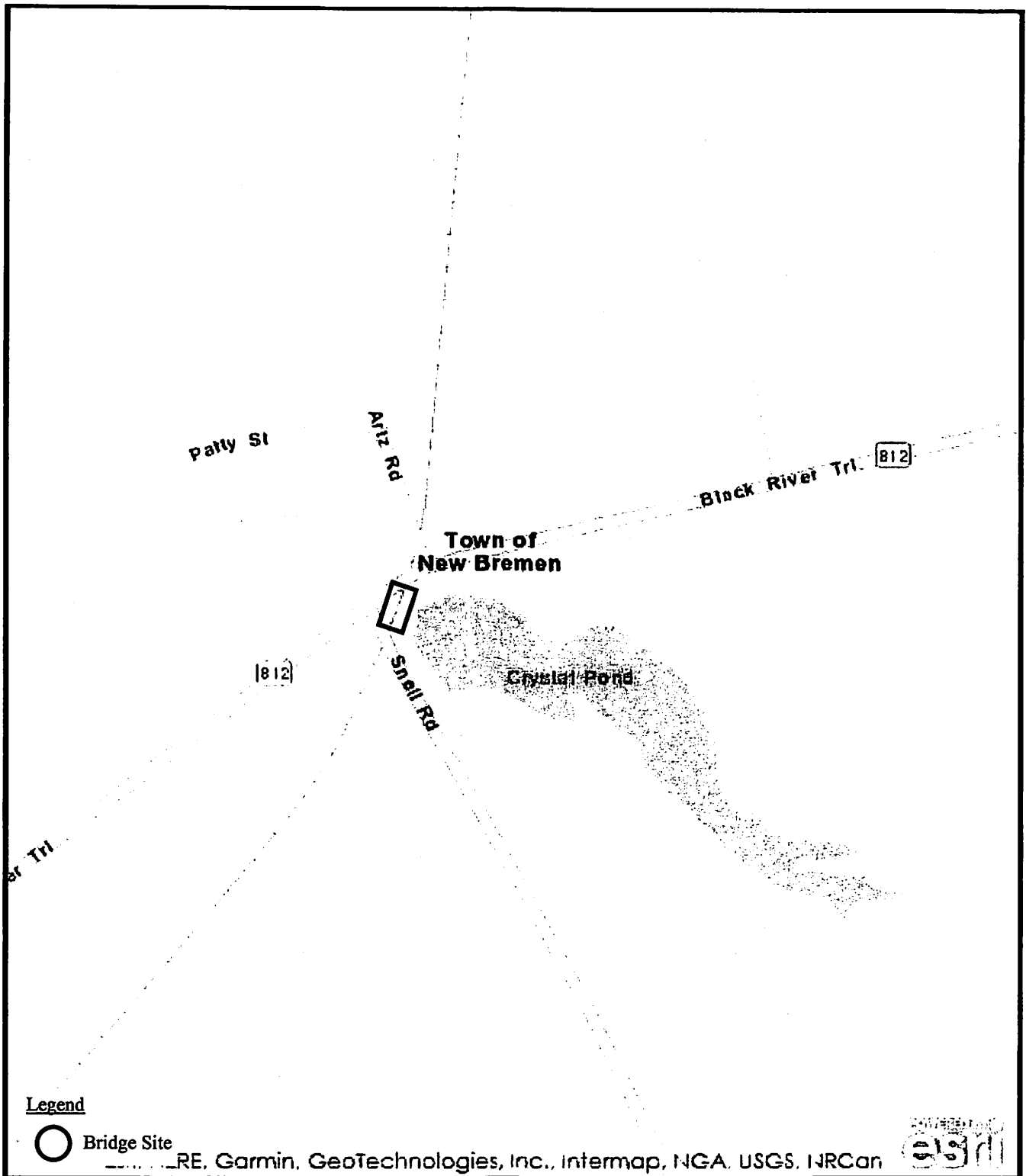


RAILS-TO-TRAILS

Village of Castorland

Lewis County, New York

**Barton
& Loguidice, D.P.C.**

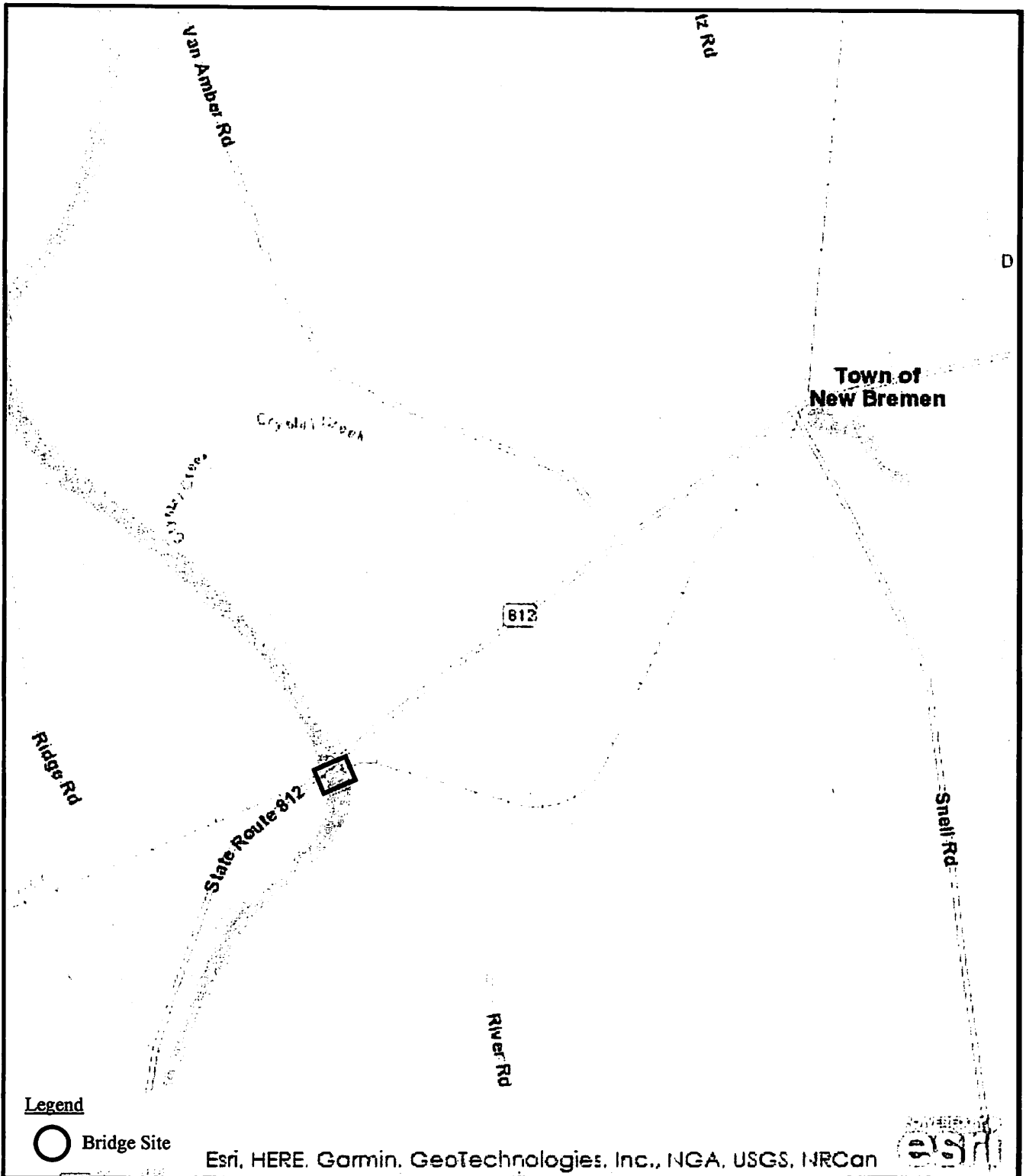


RAILS-TO-TRAILS

Town of New Bremen (Crystal Pond)

Lewis County, New York

Barton
& Loguidice, D.P.C.

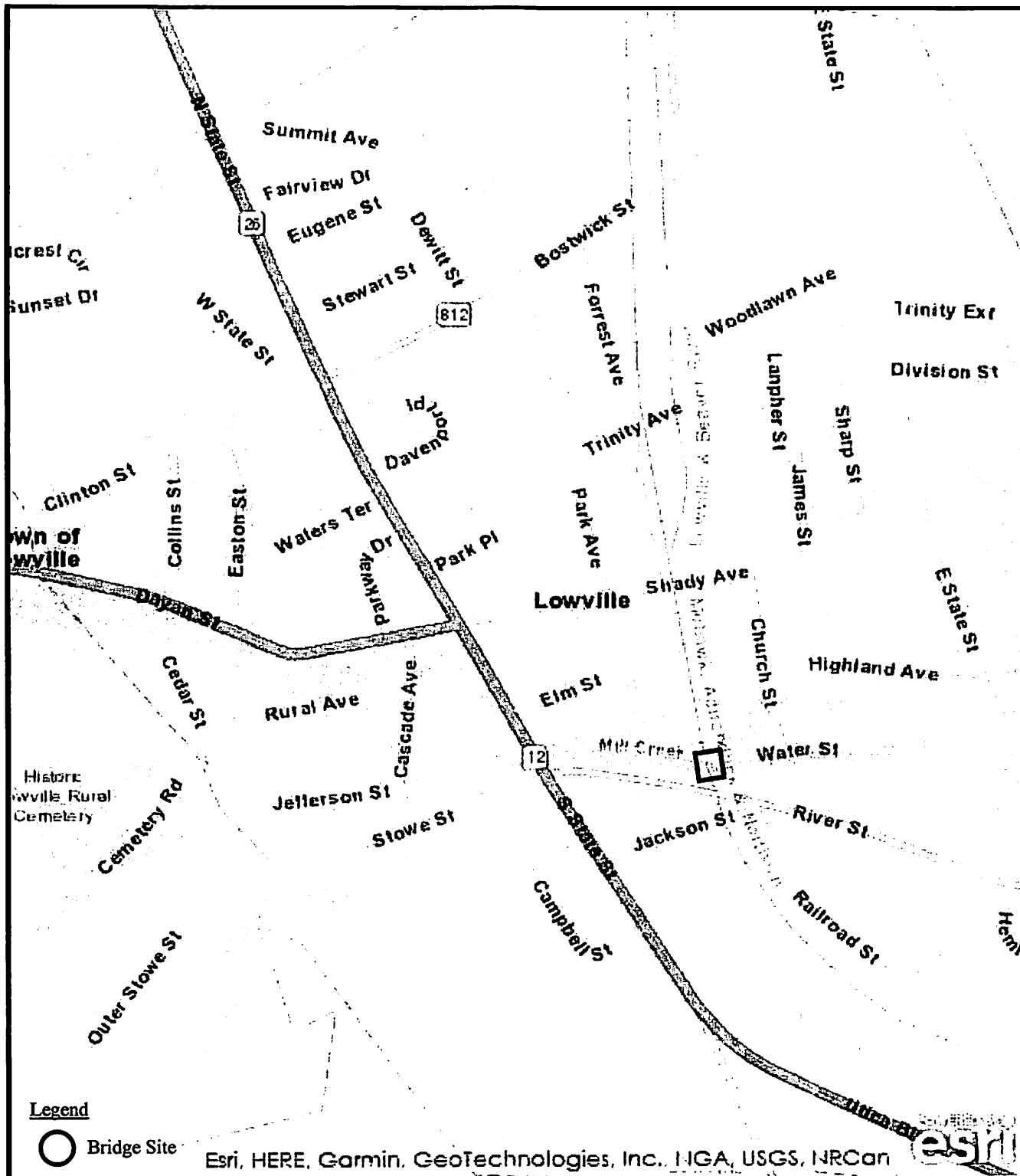


RAILS-TO-TRAILS

Town of New Bremen (Black River)

Lewis County, New York

Barton
& **Loguidice, D.P.C.**



RAILS-TO-TRAILS

Village of Lowville

Lewis County, New York

Barton
& Loguidice, D.P.C.

Appendix B

Photo Log

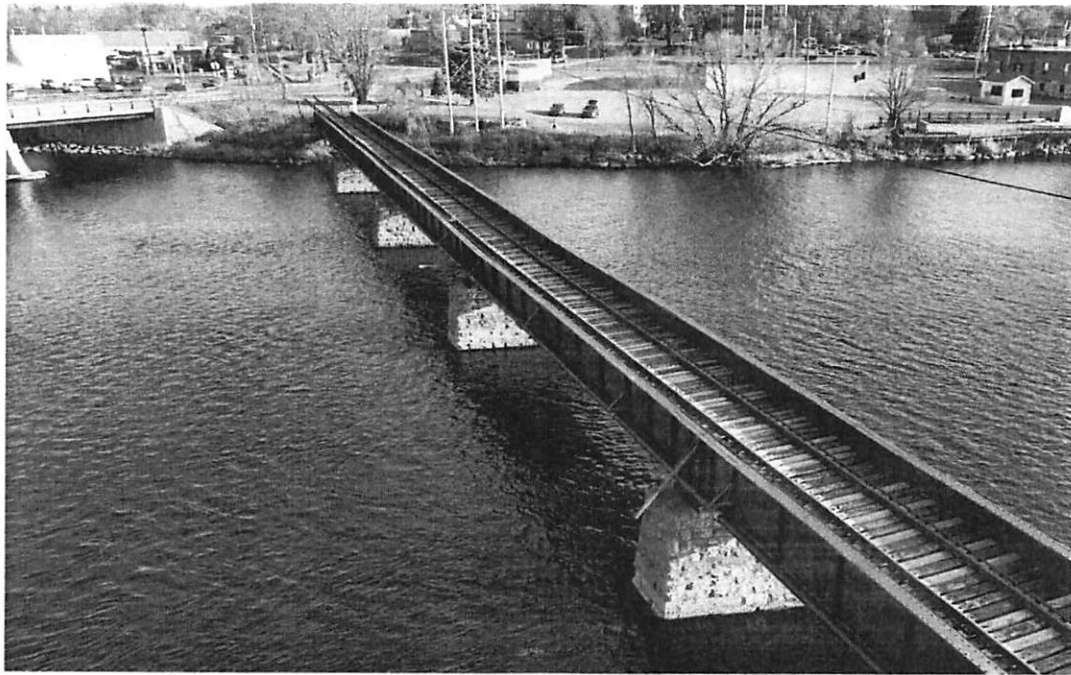


Photo No. 1

Carthage

Site Overview



Photo No. 2

Carthage

Site Overview

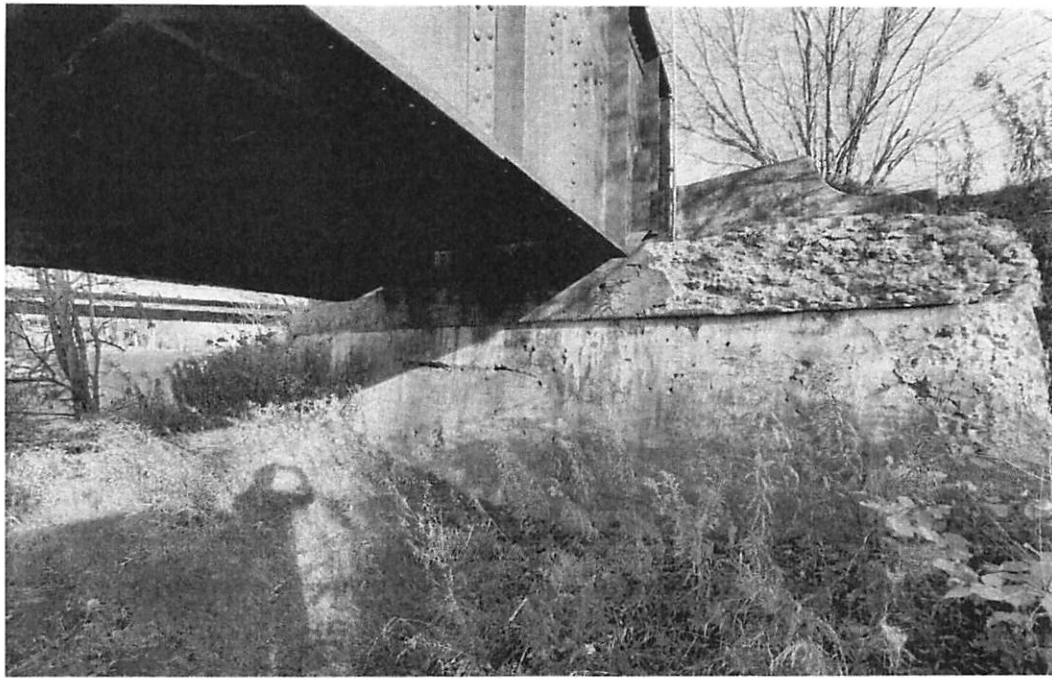


Photo No. 3

Carthage

North Abutment

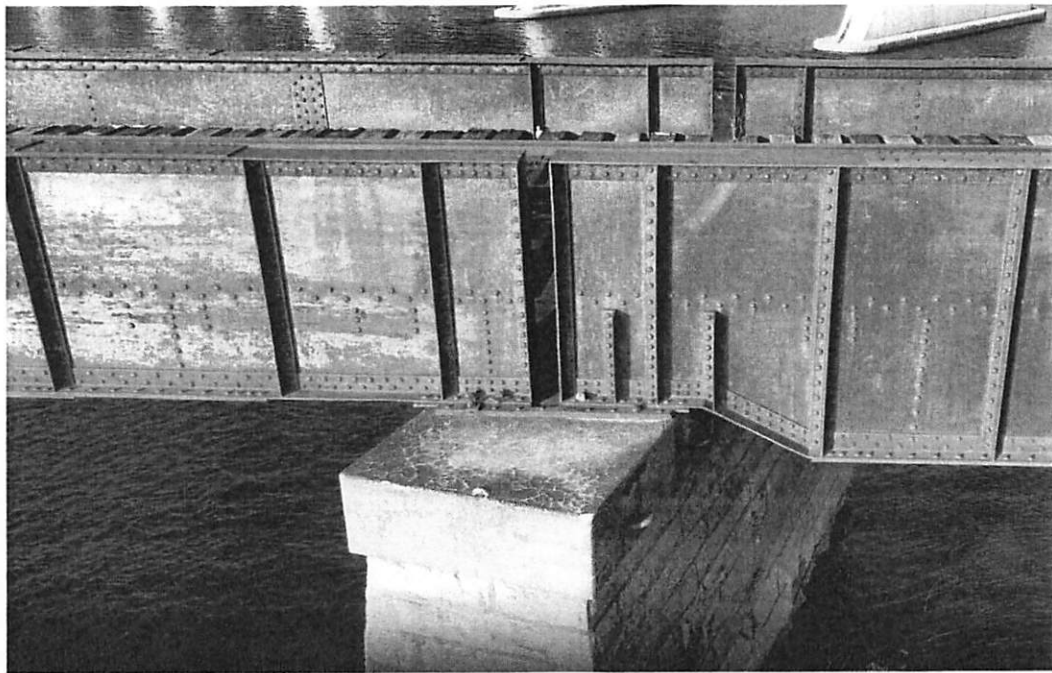


Photo No. 4

Carthage

Pier 1

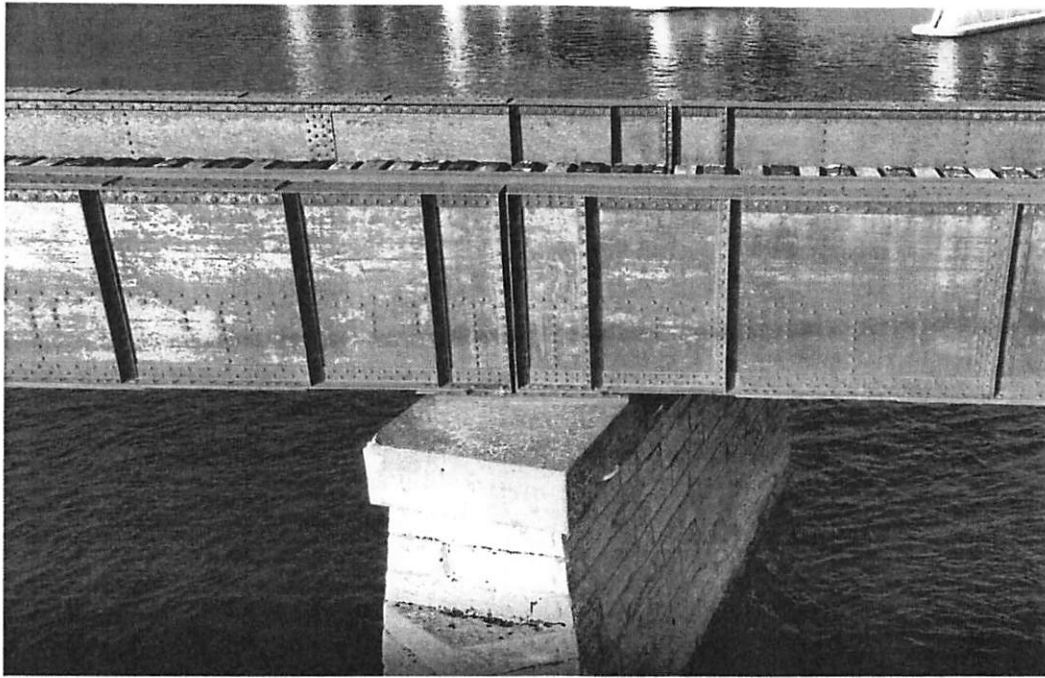


Photo No. 5

Carthage

Pier 2

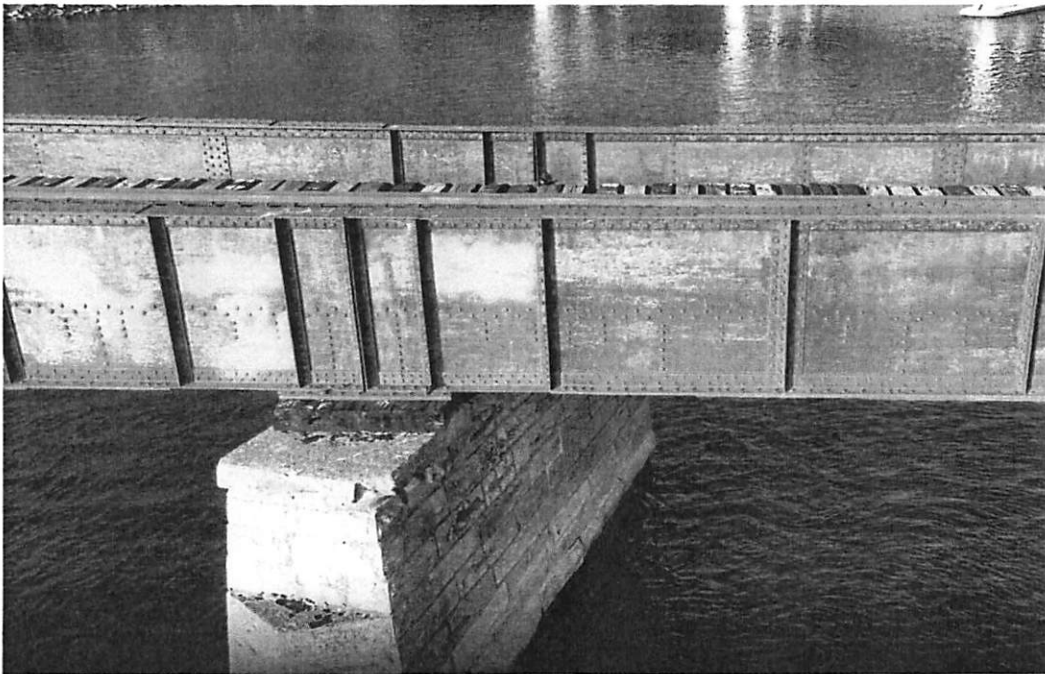


Photo No. 6

Carthage

Pier 3

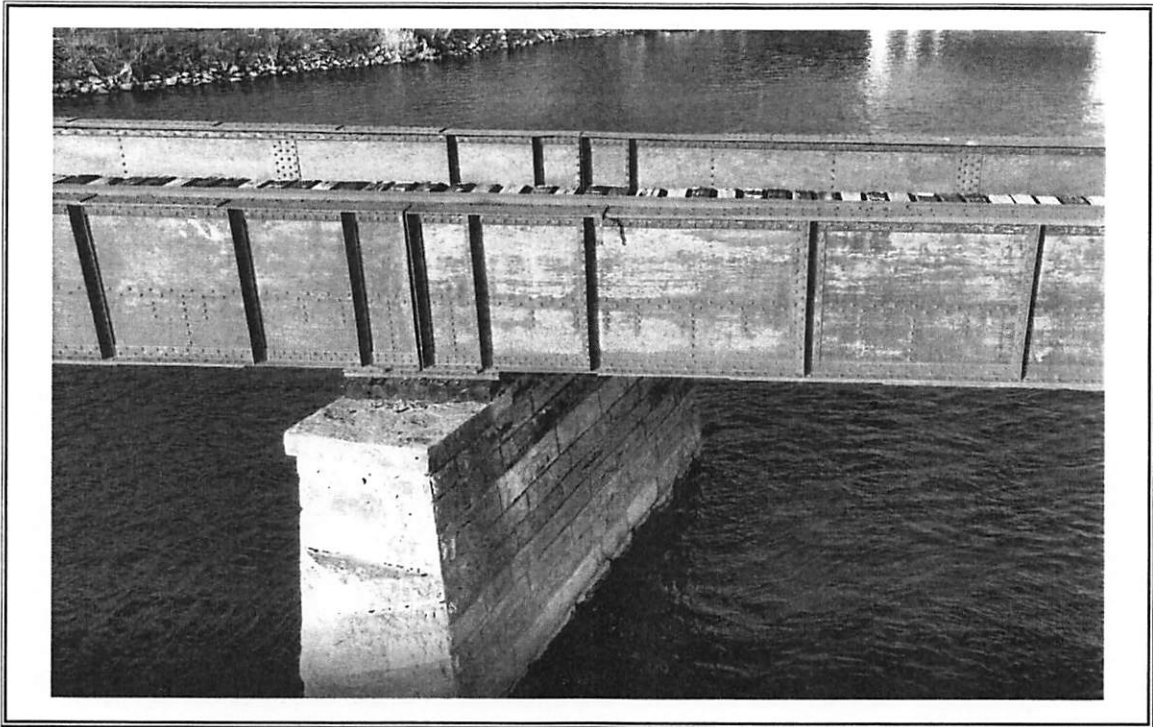


Photo No. 7

Carthage

Pier 4

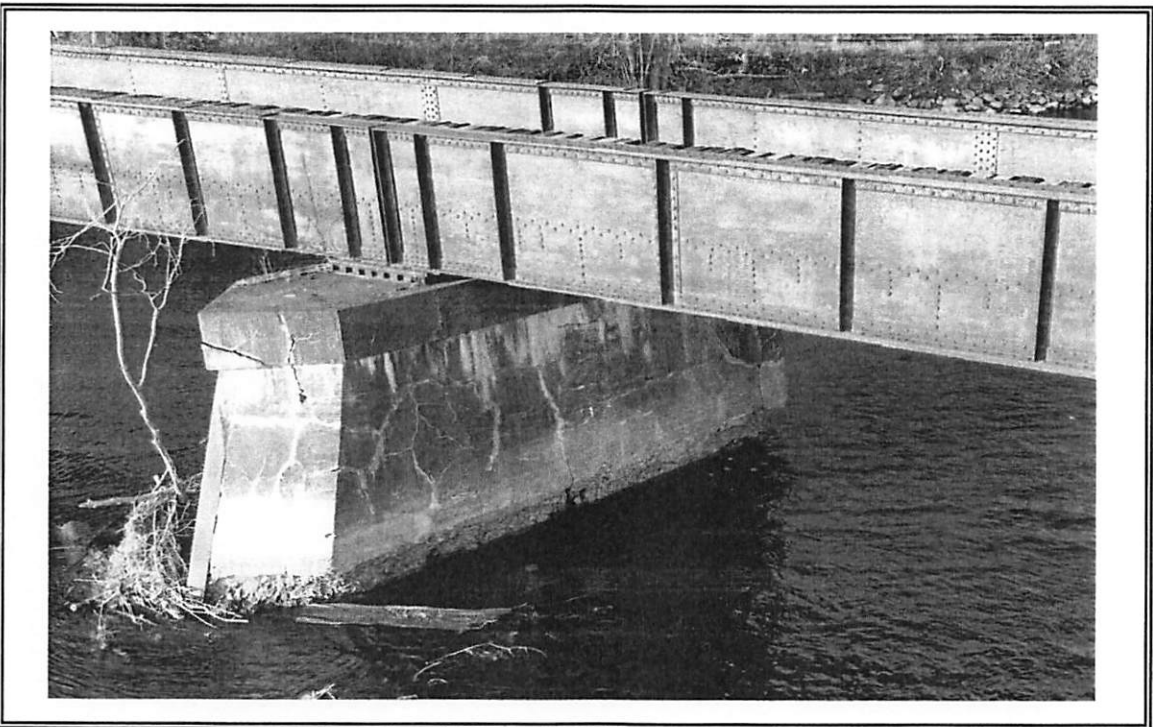


Photo No. 8

Carthage

Pier 5

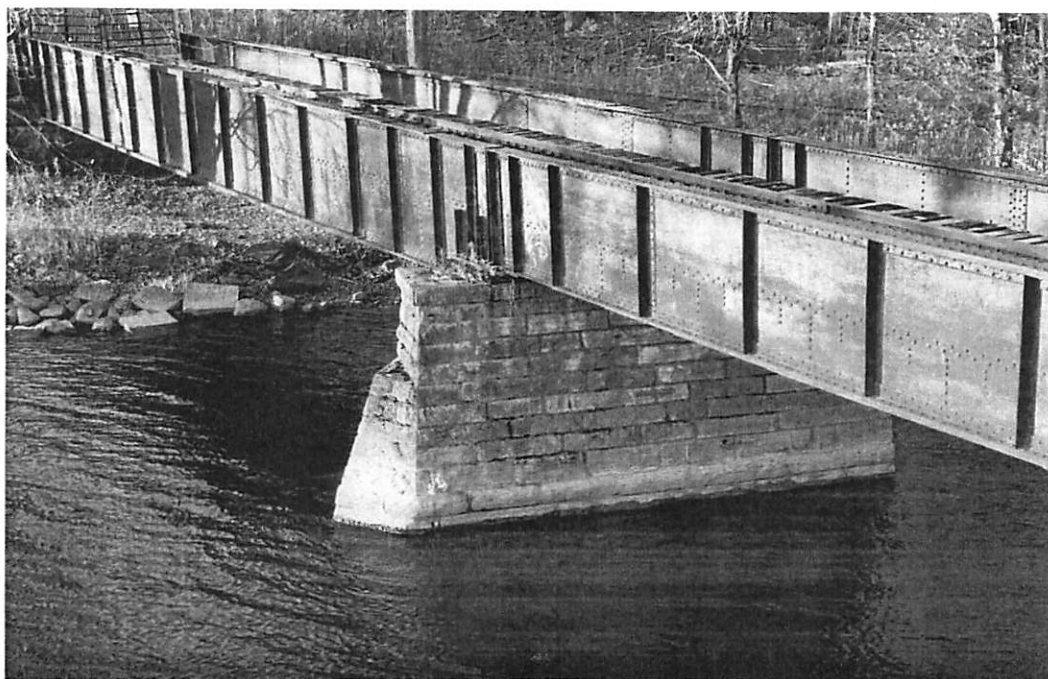


Photo No. 9

Carthage

Pier 6



Photo No. 10

Carthage

South Abutment

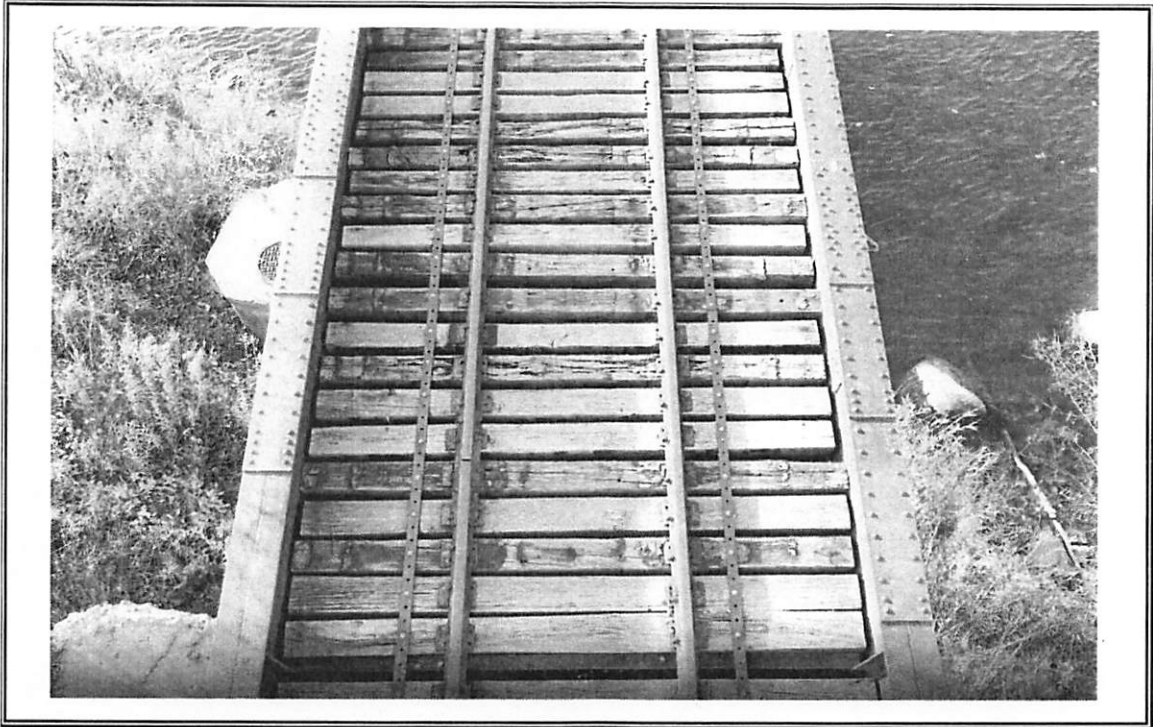


Photo No. 11

Carthage

Deck Configuration (Above)

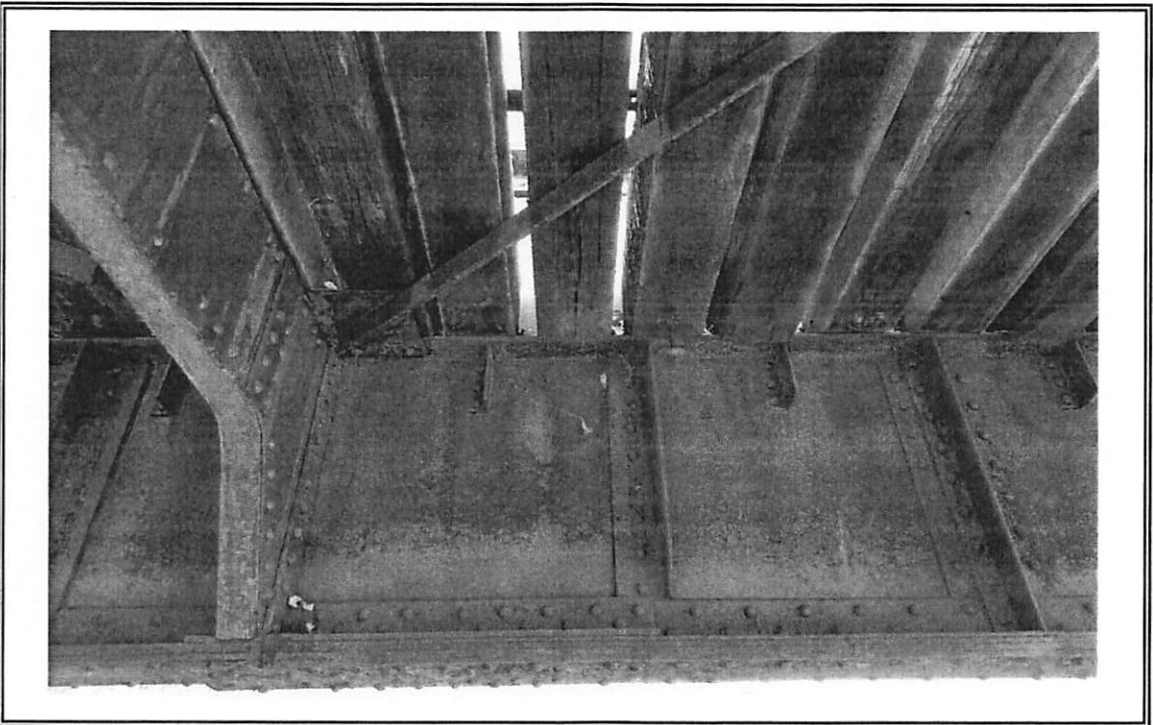


Photo No. 12

Carthage

Deck Configuration (Above)

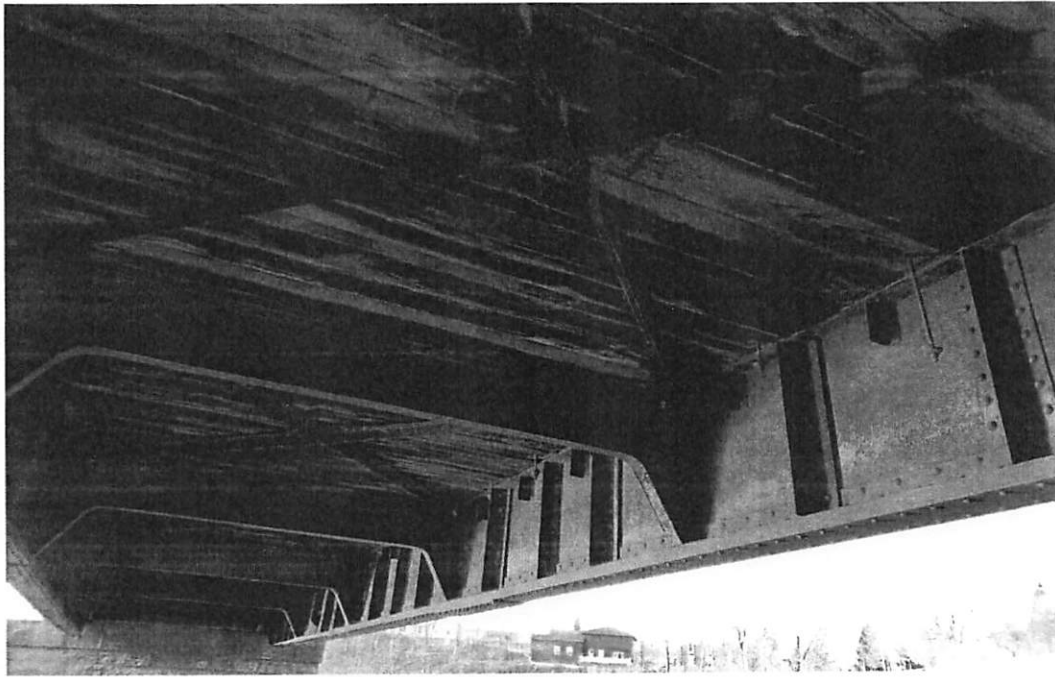


Photo No. 13

Carthage

Typical Framing



Photo No. 14

Carthage

National Grid Gas Line



Photo No. 1

Castorland

Site Overview



Photo No. 2

Castorland

Site Overview

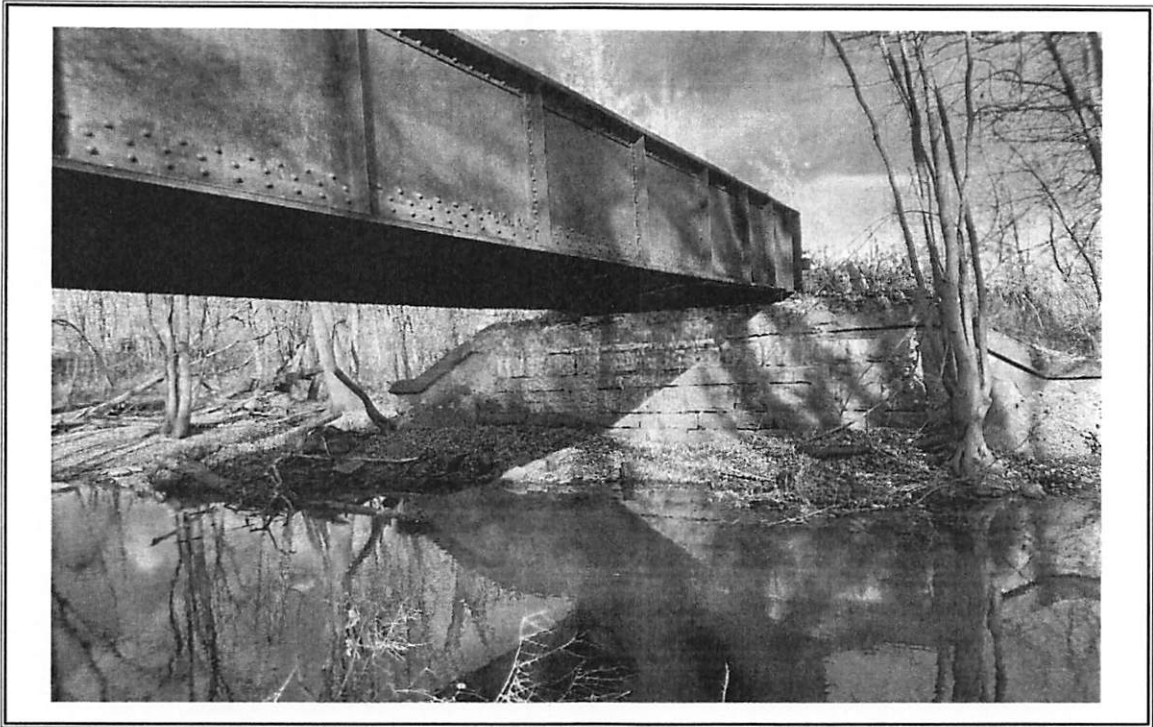


Photo No. 3

Castorland

North Abutment

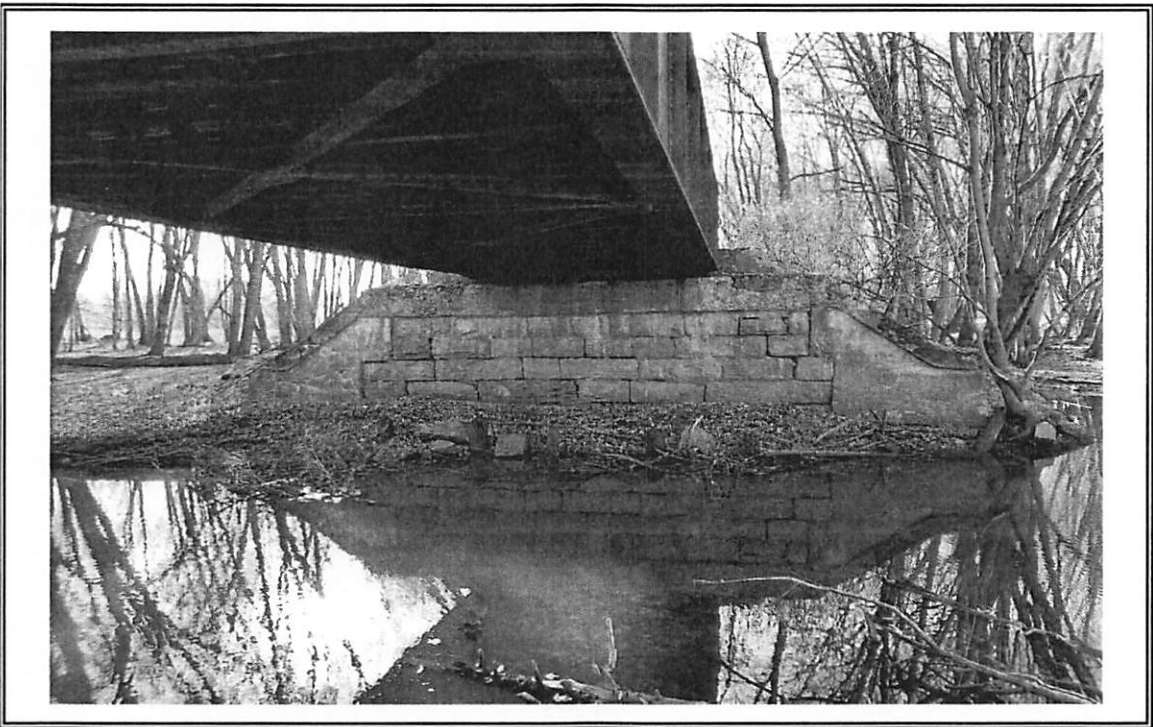


Photo No. 4

Castorland

South Abutment



Photo No. 5

Castorland

Typical Masonry Deterioration



Photo No. 6

Castorland

Typical Bridge Seat Deterioration

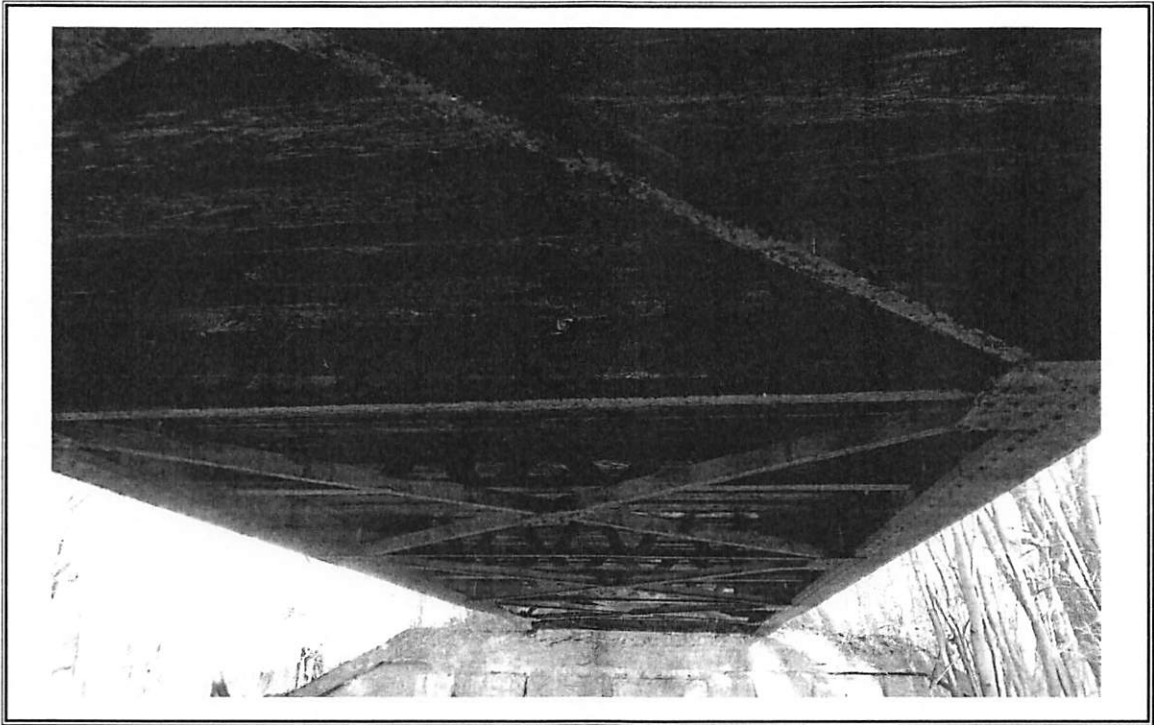


Photo No. 7

Castorland

Typical Framing

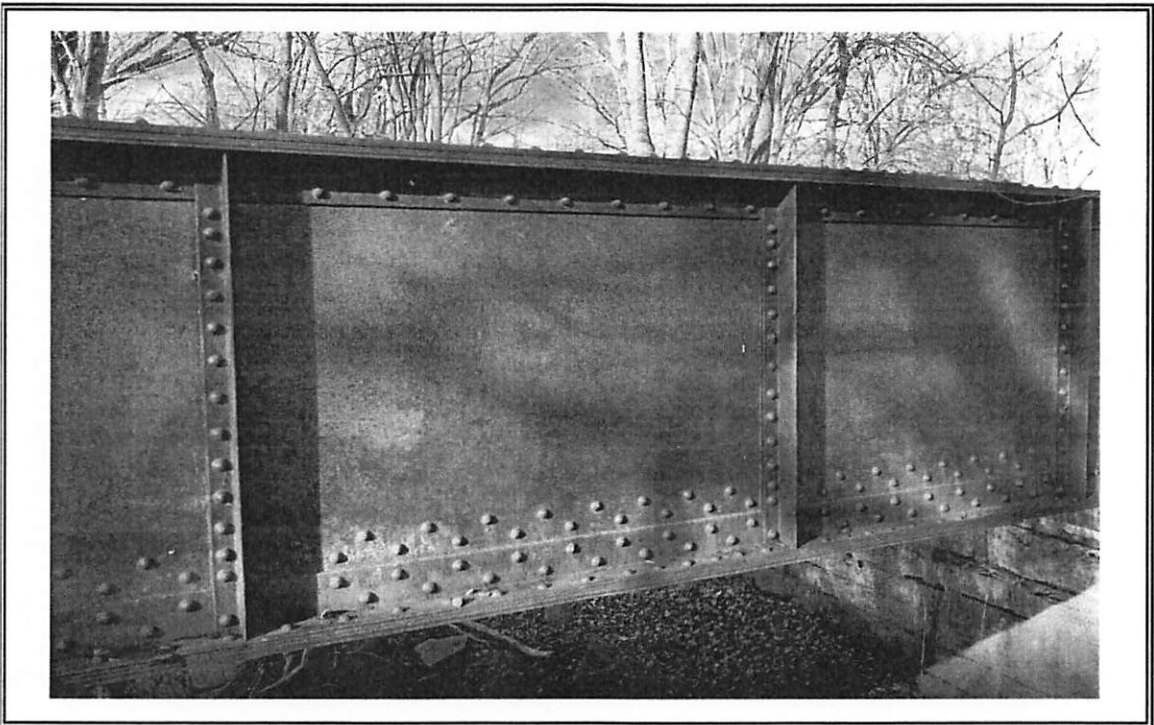


Photo No. 8

Castorland

Through-Girder

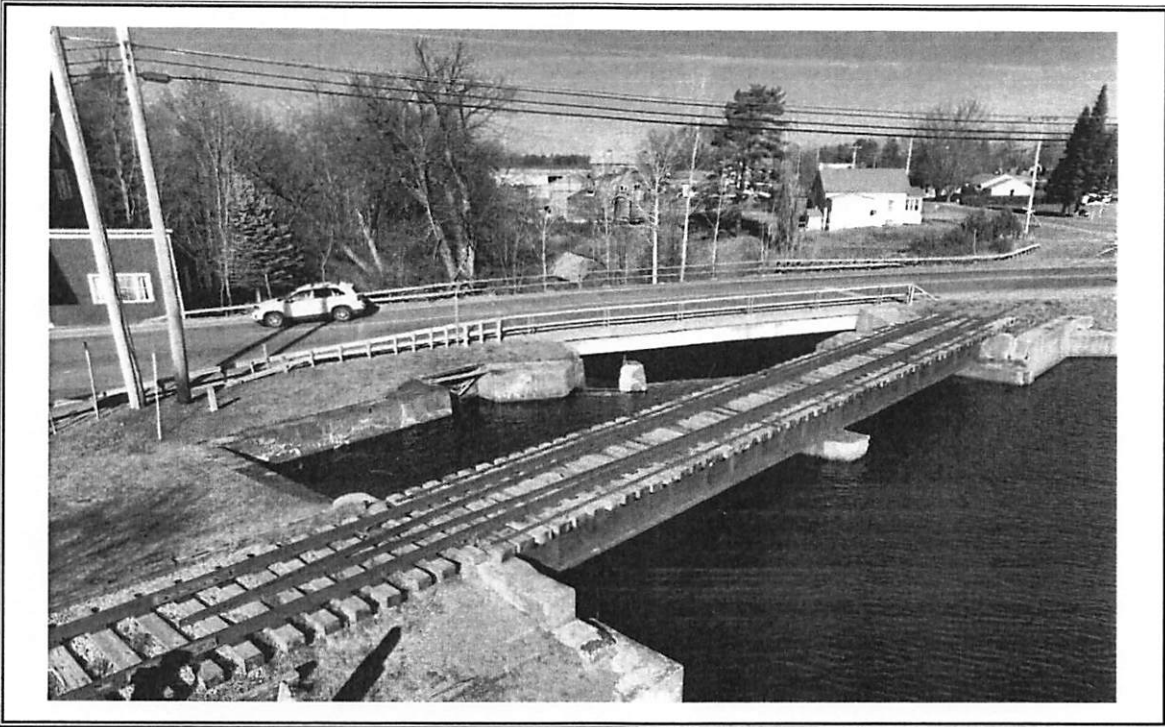


Photo No. 1

New Bremen (Crystal Pond)

Site Overview

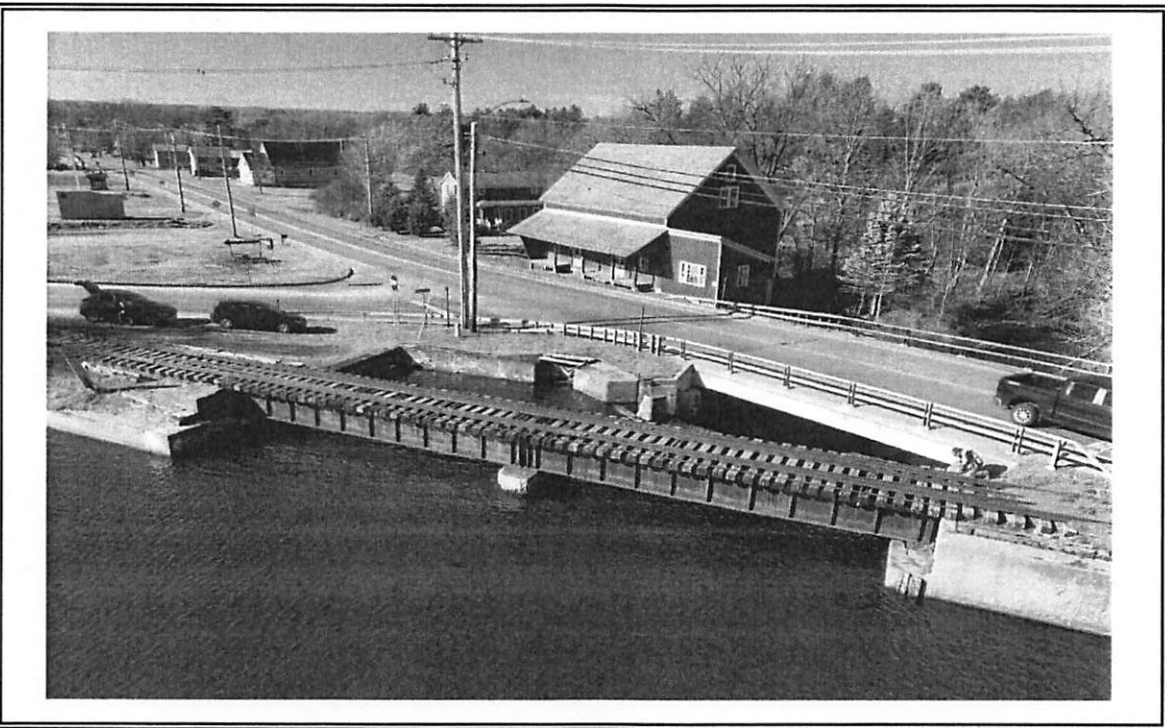


Photo No. 2

New Bremen (Crystal Pond)

Site Overview

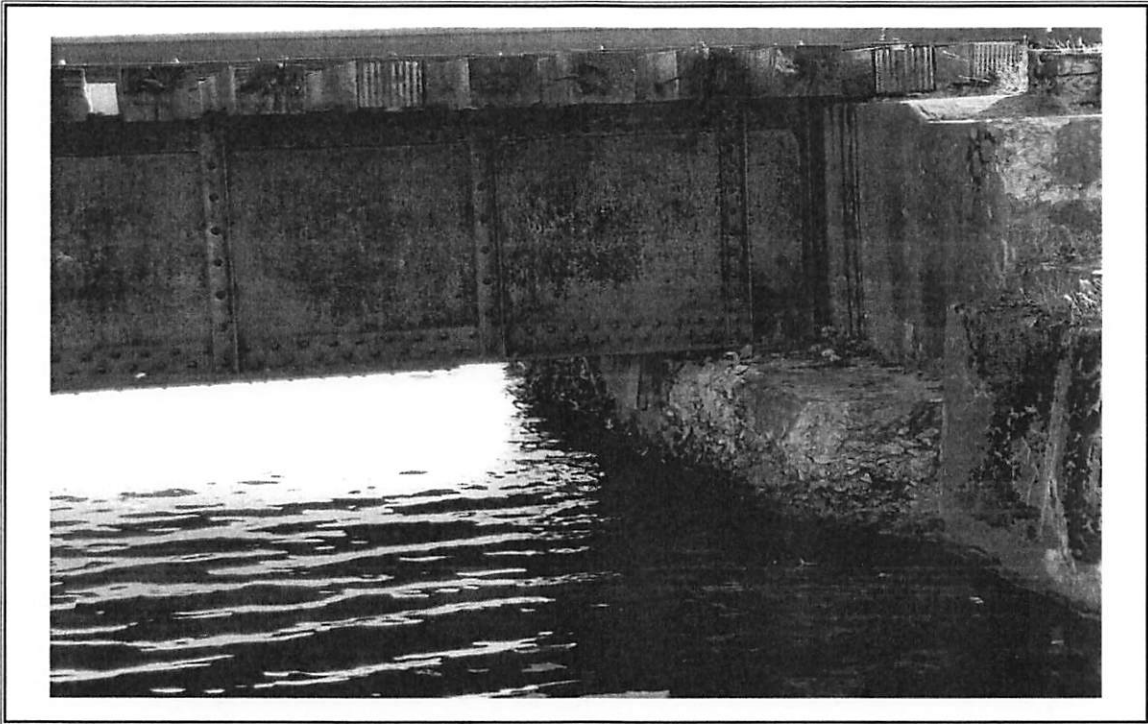


Photo No. 3

New Bremen (Crystal Pond)

West Abutment

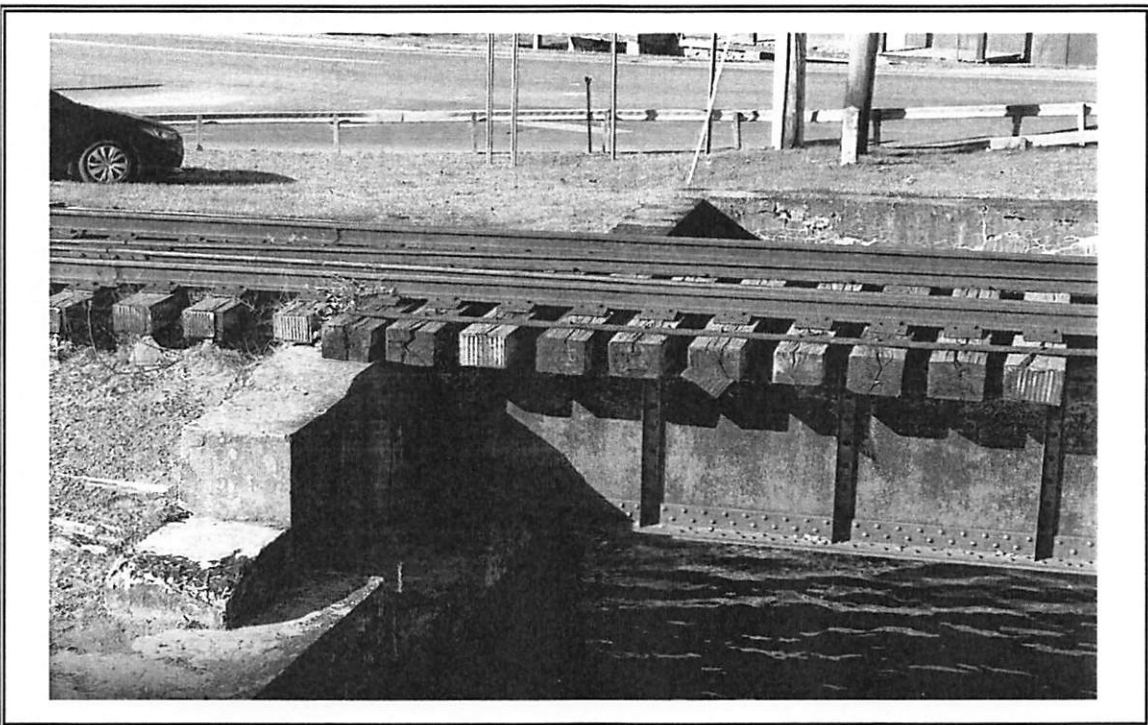


Photo No. 4

New Bremen (Crystal Pond)

West Abutment

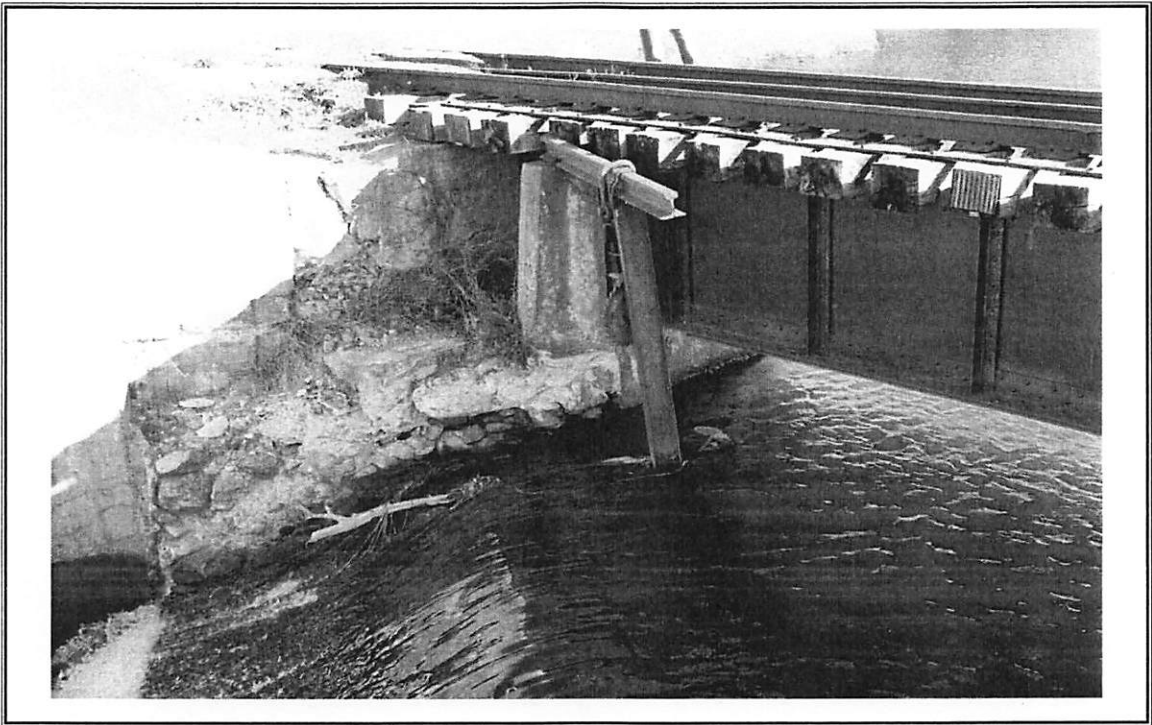


Photo No. 5

New Bremen (Crystal Pond)

East Abutment and Spillway

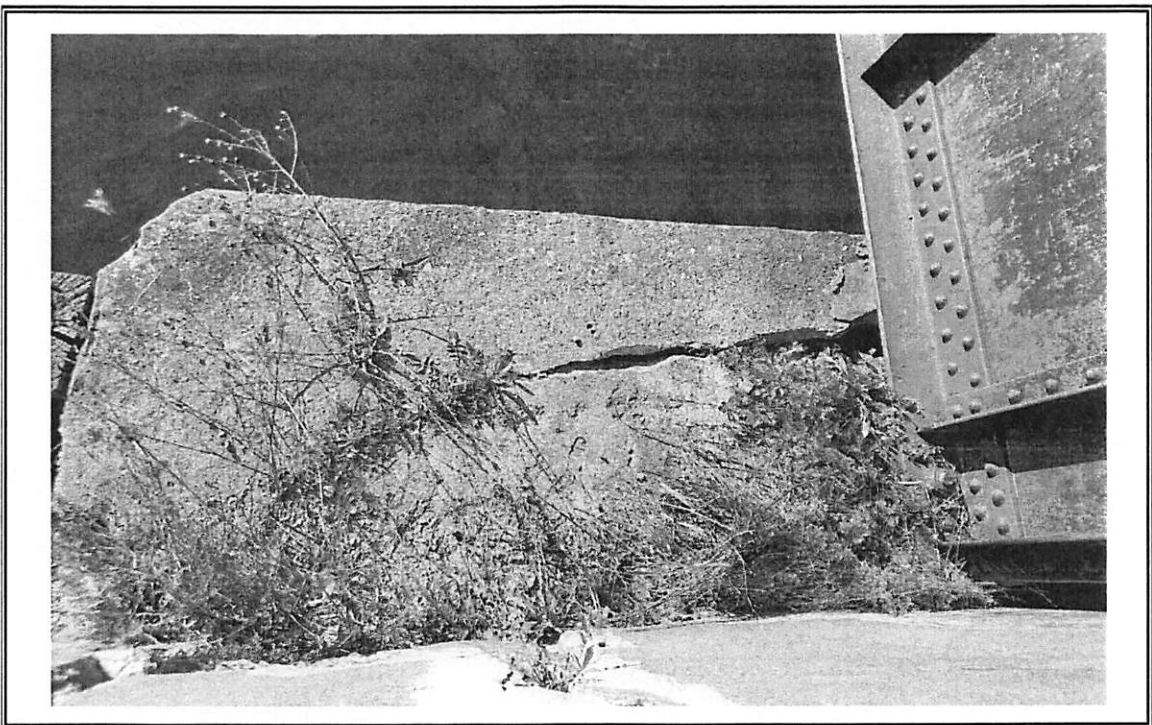


Photo No. 6

New Bremen (Crystal Pond)

East Abutment Seat Crack

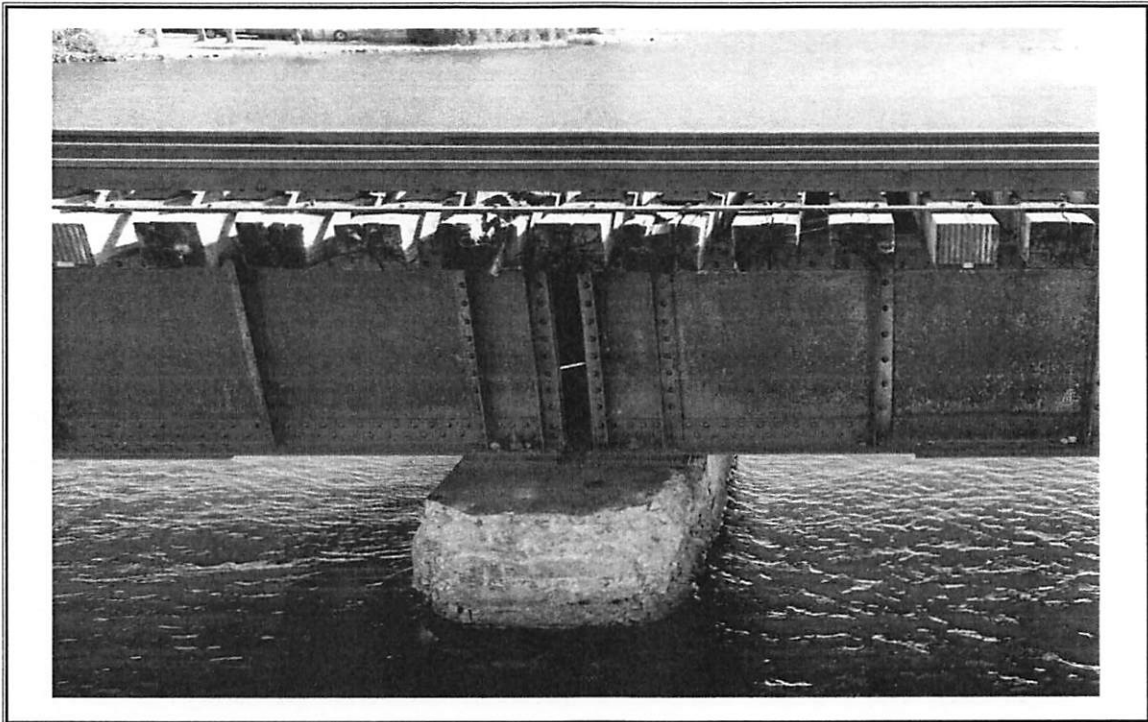


Photo No. 7

New Bremen (Crystal Pond)

Pier

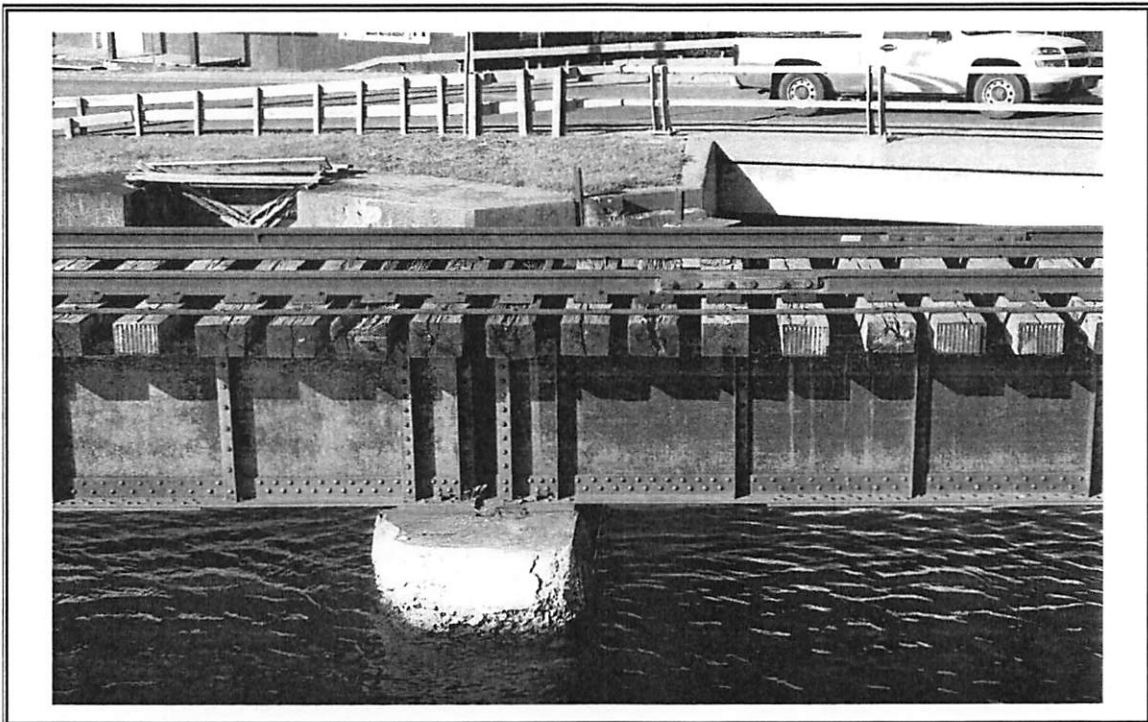


Photo No. 8

New Bremen (Crystal Pond)

Pier



Photo No. 1

New Bremen (Black River)

Site Overview

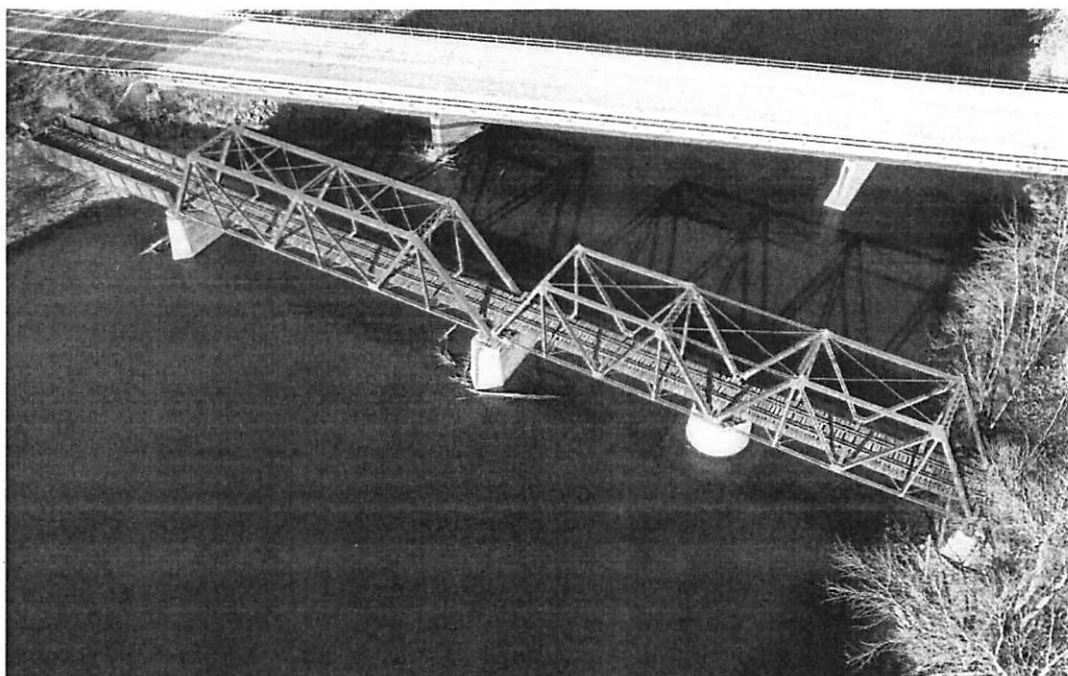


Photo No. 2

New Bremen (Black River)

Site Overview



Photo No. 3

New Bremen (Black River)

West Abutment

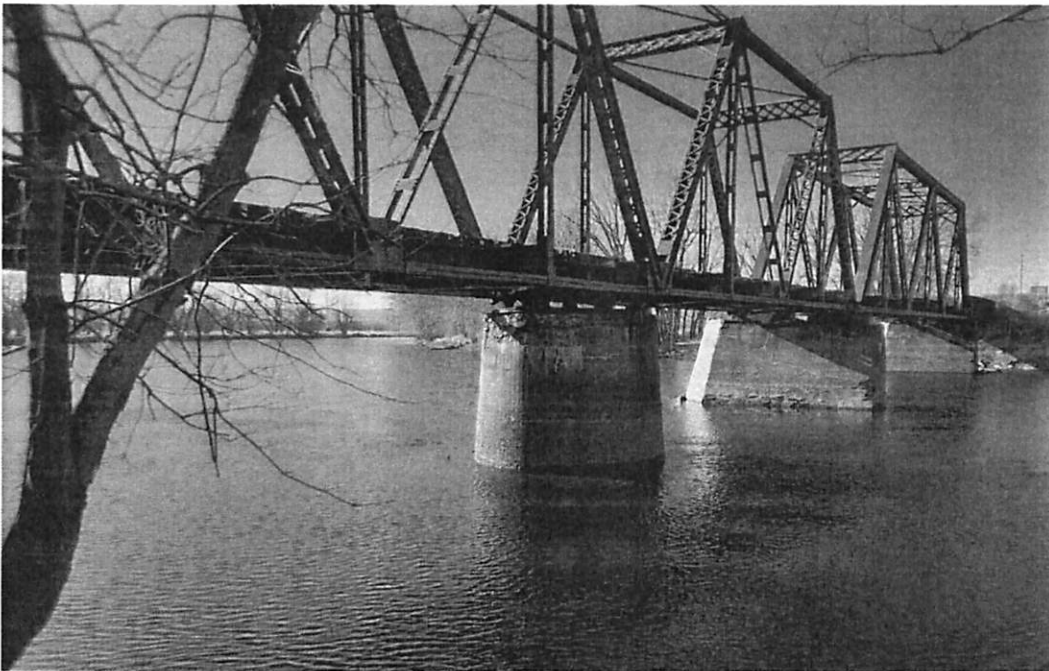


Photo No. 4

New Bremen (Black River)

Piers 1-3

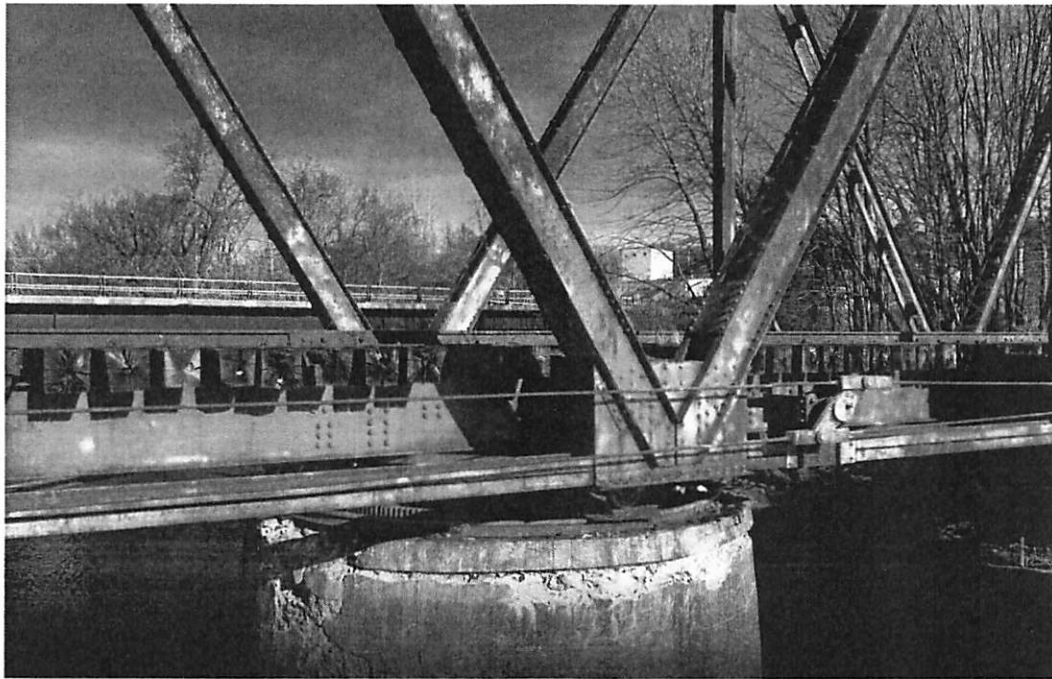


Photo No. 5

New Bremen (Black River)

Pier 1 Seat



Photo No. 6

New Bremen (Black River)

Pier 1 Seat

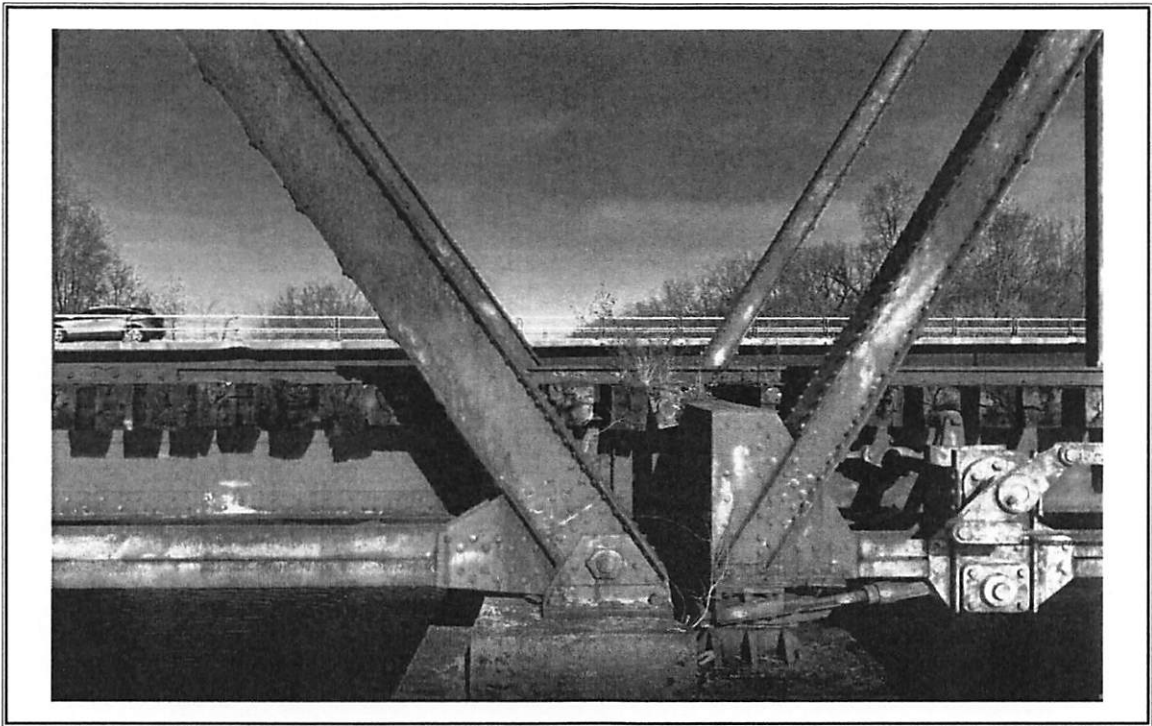


Photo No. 7

New Bremen (Black River)

Pier 2 Seat

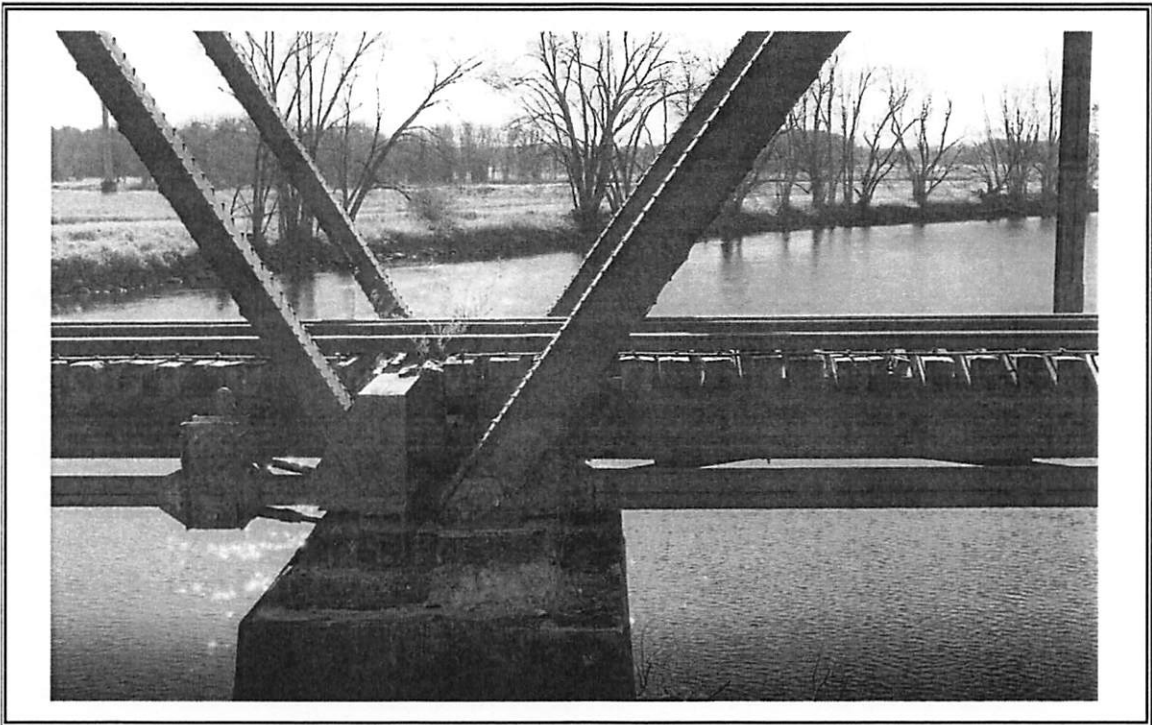


Photo No. 8

New Bremen (Black River)

Pier 2 Seat



Photo No. 9

New Bremen (Black River)

Pier 3 Seat

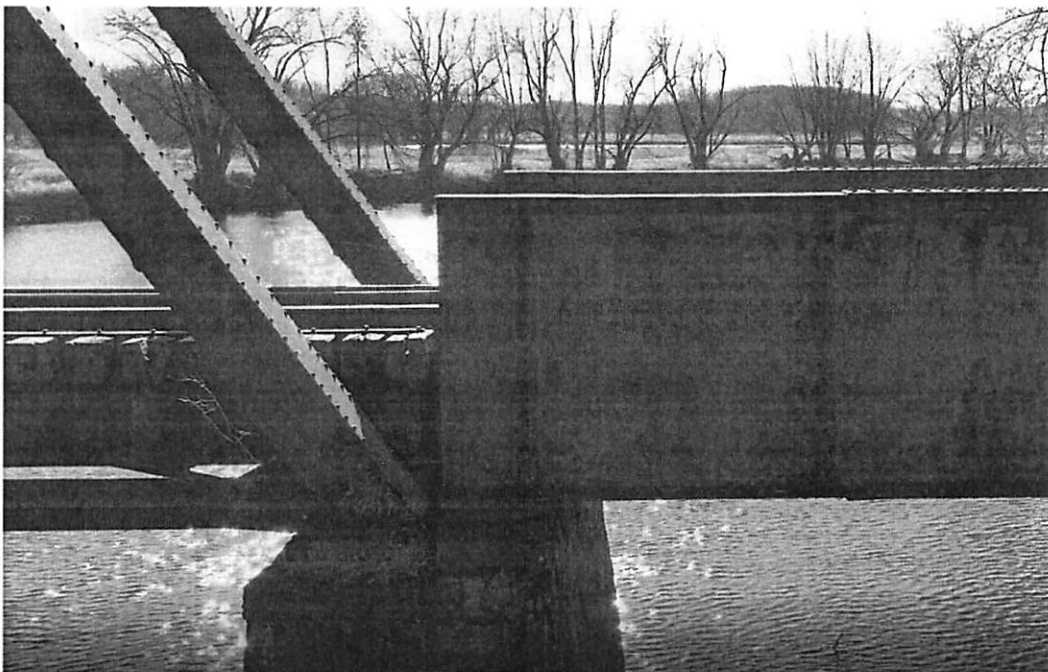


Photo No. 10

New Bremen (Black River)

Pier 3 Seat



Photo No. 11

New Bremen (Black River)

East Abutment



Photo No. 12

New Bremen (Black River)

East Abutment and U-wall



Photo No. 13

New Bremen (Black River)

Through-Girder and Framing

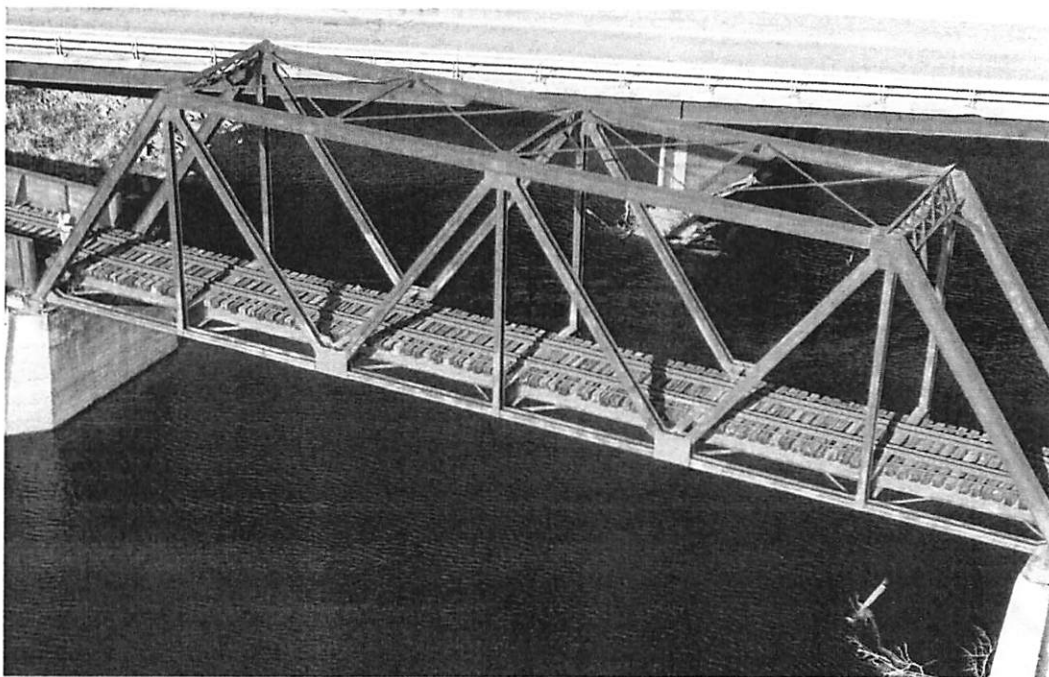


Photo No. 14

New Bremen (Black River)

Truss Framing

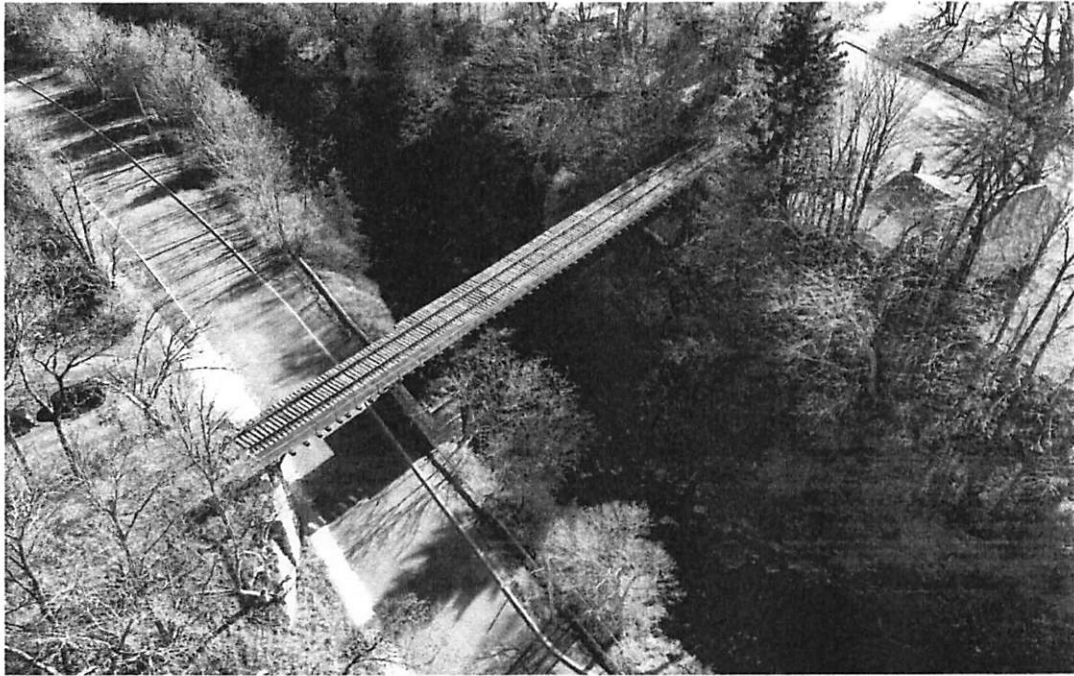


Photo No. 1

Lowville

Site Overview

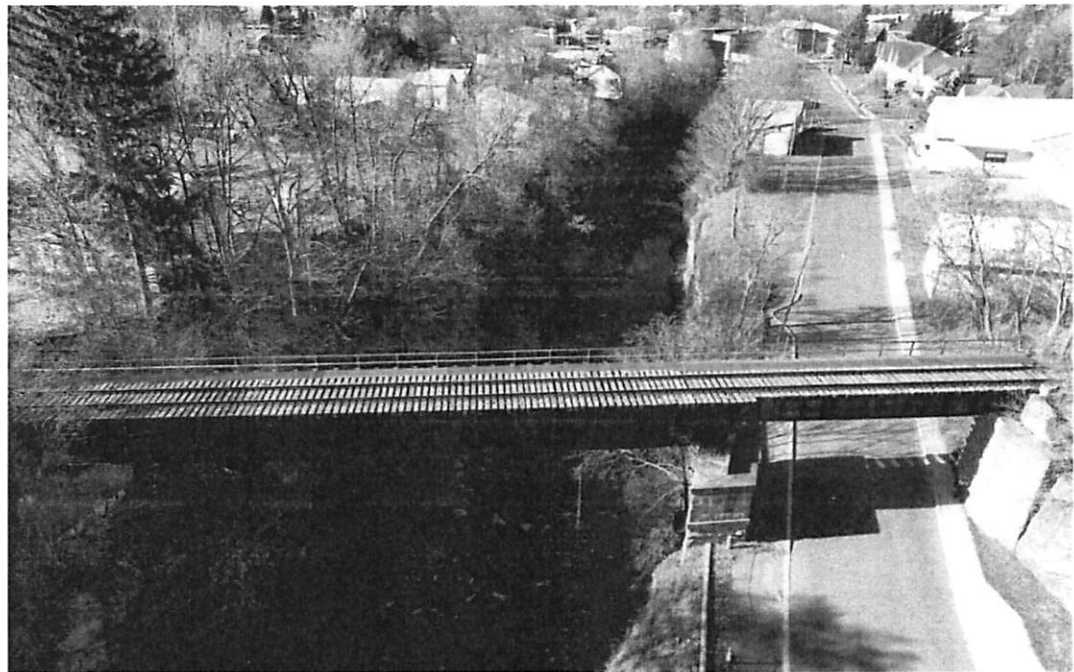


Photo No. 2

Lowville

Site Overview

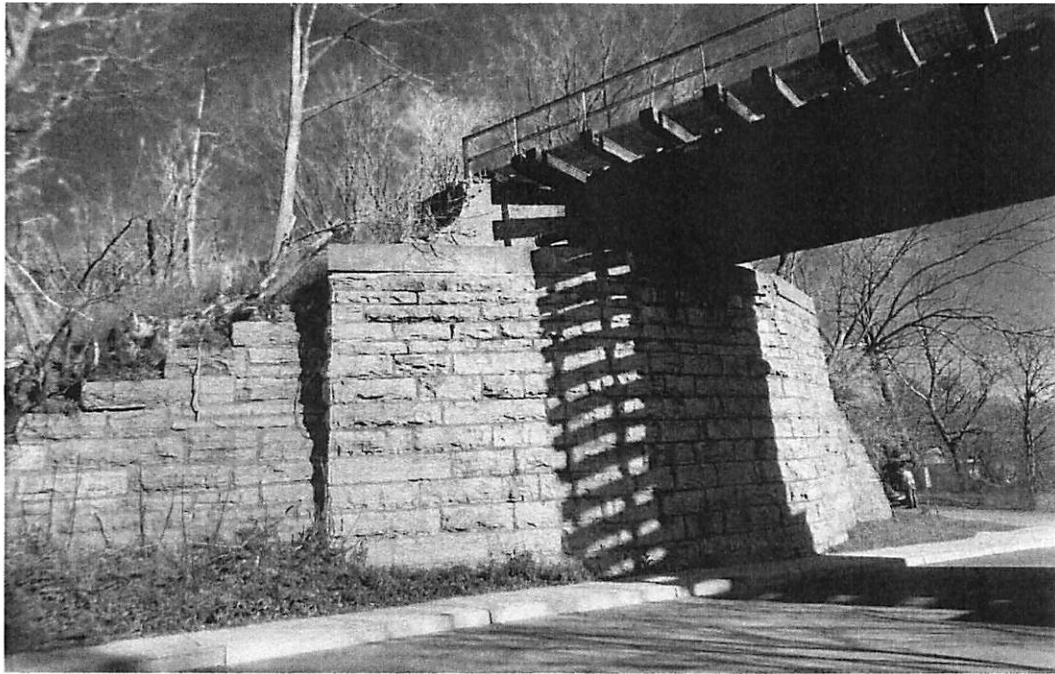


Photo No. 3

Lowville

North Abutment

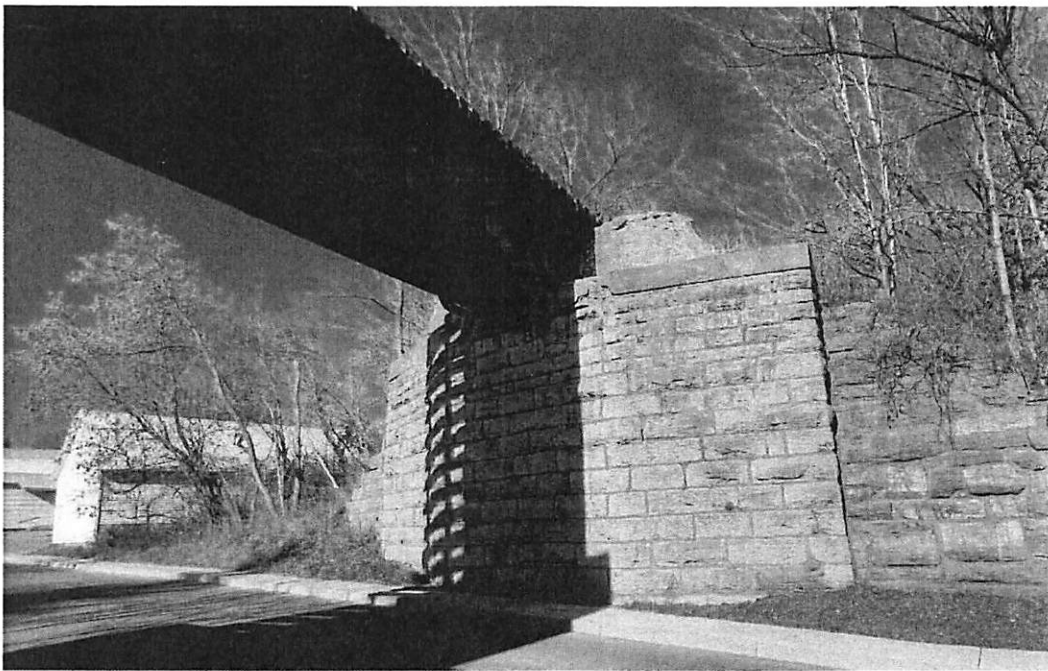


Photo No. 4

Lowville

North Abutment



Photo No. 5

Lowville

Pier



Photo No. 6

Lowville

Pier Seat and Pedestals

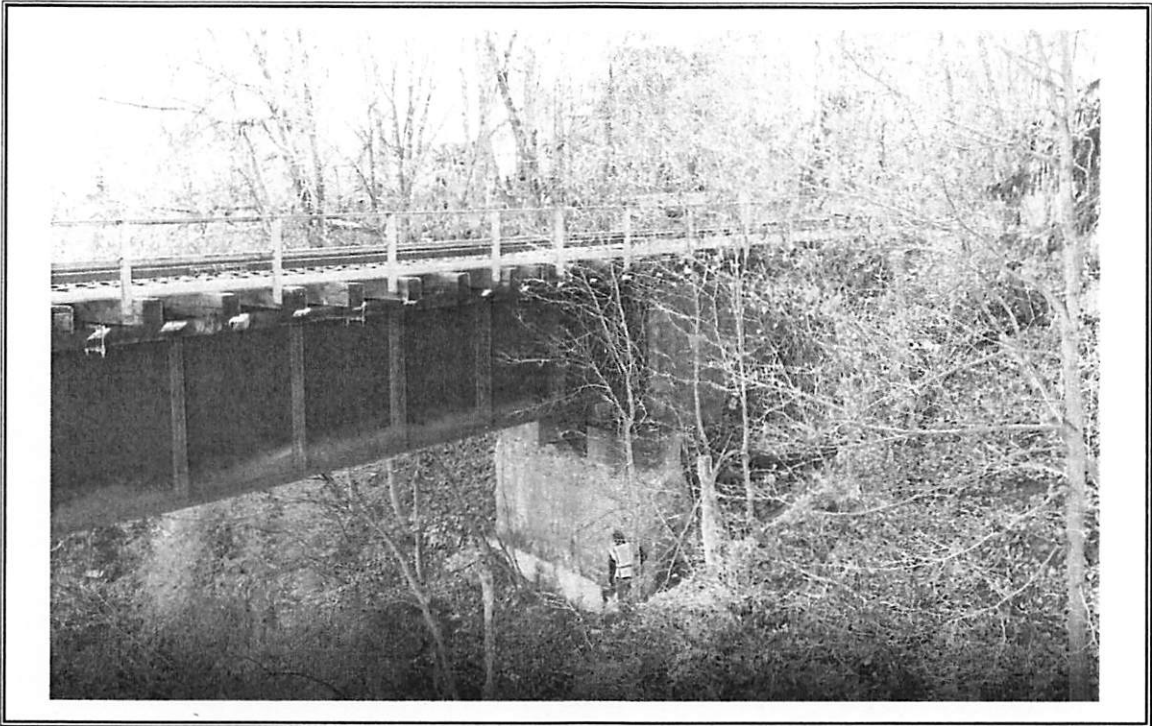


Photo No. 7

Lowville

South Abutment

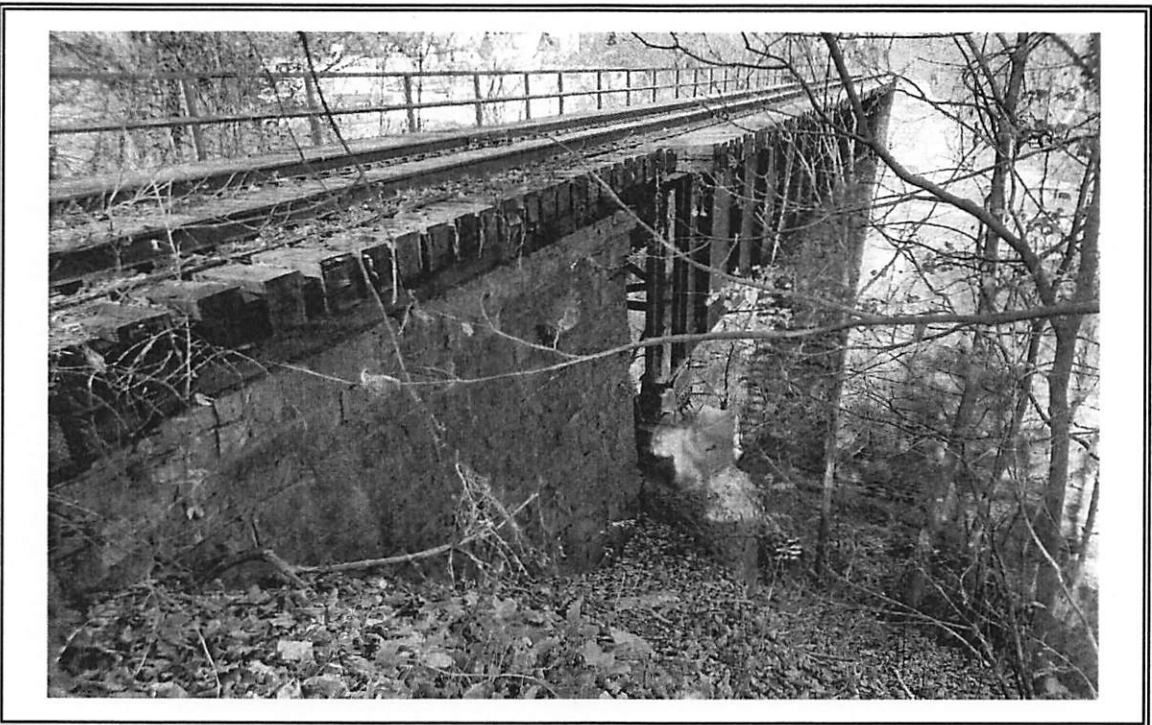


Photo No. 8

Lowville

South Abutment and Pedestals

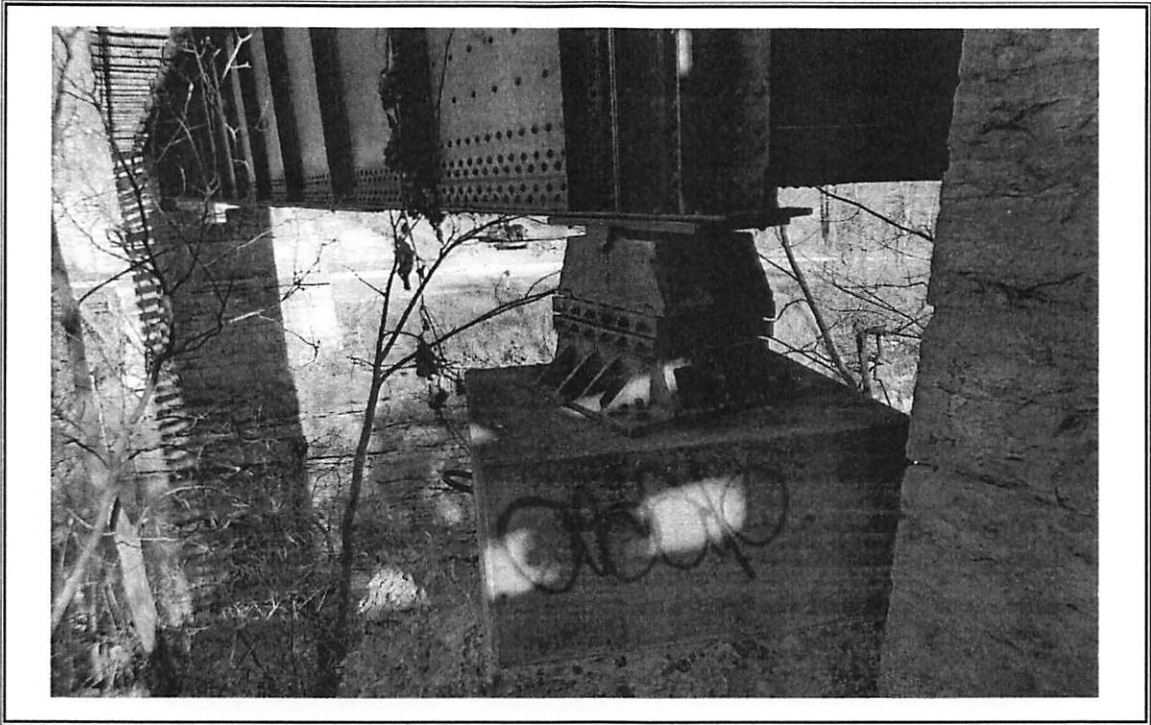


Photo No. 9

Lowville

Bearings (South Abutment)

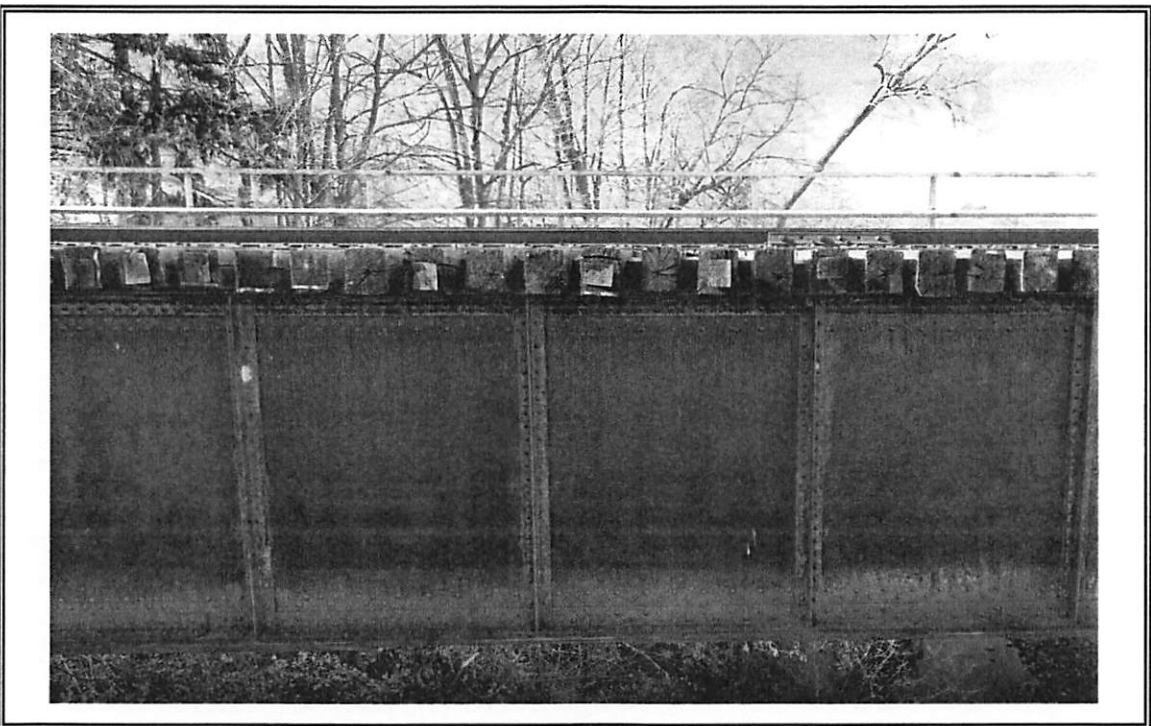


Photo No. 10

Lowville

Typical Girder

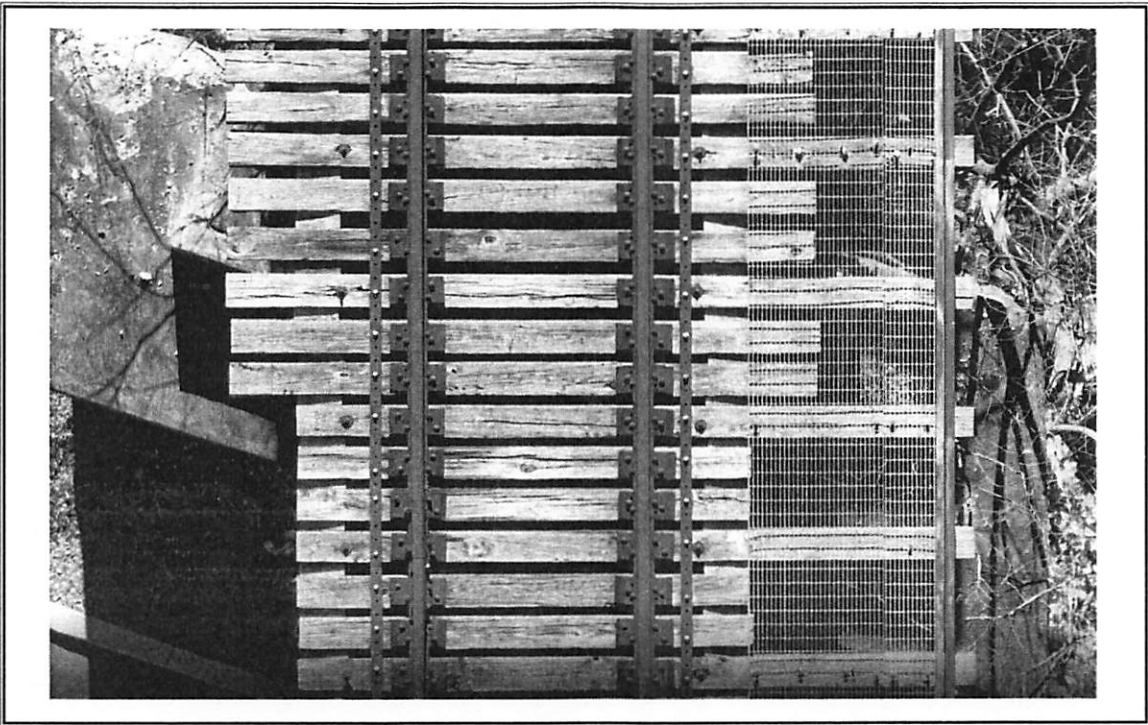


Photo No. 11

Lowville

Typical Decking and National Grid Catwalk

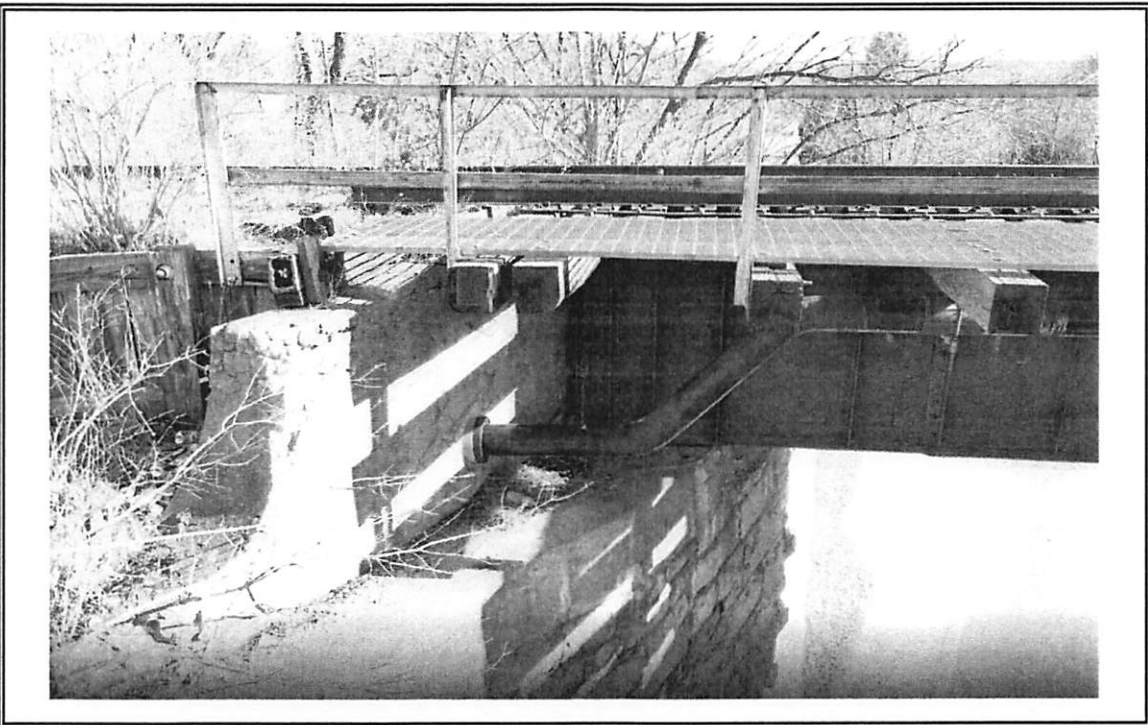


Photo No. 12

Lowville

National Grid Gas Line

Appendix C
Preliminary Estimate

ENGINEER'S ESTIMATE

Project Title: Rails-to-Trails Condition Assessment
Agency & Location: Lewis County
Submittal: Preliminary

JOB NO: 296.046
PREP BY: ZPD

VILLAGE OF CARTHAGE

VILLAGE OF CASTORLAND

TOWN OF NEW BREMEN
(CRYSTAL POND)

TOWN OF NEW BREMEN
(BLACK RIVER)

VILLAGE OF LOWVILLE

SUPERSTRUCTURE

DESCRIPTION (ITEM) [ASSUMPTIONS]	UNIT	COST/UNIT	QUANTITY	Cost	QUANTITY	Cost	QUANTITY	Cost	QUANTITY	Cost	QUANTITY	Cost
REMOVE EXISTING TIMBER DECK (ITEM 203.2301)	SF	\$ 10.00	7200	\$ 72,000.00	770	\$ 7,700.00	550	\$ 5,500.00	3400	\$ 34,000.00	1600	\$ 16,000.00
INSTALL NEW TIMBER DECK (ITEM 594.10000004) [12" WIDTH GLULAM]	SF	\$ 100.00	6650	\$ 665,000.00	660	\$ 66,000.00	900	\$ 90,000.00	3400	\$ 340,000.00	1600	\$ 160,000.00
PEDESTRIAN RAIL (ITEM 568.80406103) [SURFACE MOUNTED TO DECK]	LF	\$ 200.00	1110	\$ 222,000.00	110	\$ 22,000.00	150	\$ 30,000.00	570	\$ 114,000.00	320	\$ 64,000.00
ESTIMATE SUB TOTAL				\$ 959,000.00		\$ 96,000.00		\$ 126,000.00		\$ 488,000.00		\$ 240,000.00
5% FCP				\$ 48,000.00		\$ 5,000.00		\$ 7,000.00		\$ 25,000.00		\$ 12,000.00
SUBTOTAL 1				\$ 1,007,000.00		\$ 101,000.00		\$ 133,000.00		\$ 513,000.00		\$ 252,000.00
15% CONTINGENCY				\$ 151,000.00		\$ 15,000.00		\$ 20,000.00		\$ 77,000.00		\$ 38,000.00
4% MOBILIZATION				\$ 40,000.00		\$ 4,000.00		\$ 5,000.00		\$ 21,000.00		\$ 10,000.00
SUBTOTAL 2				\$ 1,198,000.00		\$ 120,000.00		\$ 158,000.00		\$ 611,000.00		\$ 300,000.00
3% PRICE INFLATION				\$ 36,000.00		\$ 4,000.00		\$ 5,000.00		\$ 18,000.00		\$ 9,000.00
SUBTOTAL 3				\$ 1,235,000.00		\$ 125,000.00		\$ 165,000.00		\$ 630,000.00		\$ 310,000.00
SUPERSTRUCTURE TOTAL				\$ 1,235,000.00		\$ 125,000.00		\$ 165,000.00		\$ 630,000.00		\$ 310,000.00

SUBSTRUCTURE

DESCRIPTION (ITEM) [ASSUMPTIONS]	UNIT	COST/UNIT	QUANTITY	Cost	QUANTITY	Cost	QUANTITY	Cost	QUANTITY	Cost	QUANTITY	Cost
CLASS D CONCRETE REPAIR (ITEM 582.06)	SF	\$ 130.00	90	\$ 11,700.00	110	\$ 14,300.00		\$ -	120	\$ 15,600.00	220	\$ 28,600.00
CLASS D CONCRETE REPAIR (ITEM 582.06) [COST INCLUDES WATER ACCESS]	SF	\$ 150.00	480	\$ 72,000.00		\$ -	90	\$ 13,500.00	540	\$ 81,000.00		\$ -
CLASS A CONCRETE REPAIR (ITEM 582.05) [AVERAGE 6" DEPTH]	CY	\$ 6,500.00	2	\$ 13,000.00	6	\$ 39,000.00		\$ -	1	\$ 6,500.00	10	\$ 65,000.00
CLASS A CONCRETE REPAIR (ITEM 582.05) [AVERAGE 6" DEPTH, COST INCLUDES WATER]	CY	\$ 7,500.00	5	\$ 37,500.00		\$ -	4	\$ 30,000.00	10	\$ 75,000.00		\$ -
STRUCTURAL LIFTING (ITEM 585.01)	EA	\$ 2,500.00	12	\$ 30,000.00		\$ -		\$ -		\$ -		\$ -
REMOVE AND REPLACE BEARING (ITEM 564.70) [REPLACE WITH GALVANIZED STEEL BOLSTER]	EA	\$ 1,500.00	12	\$ 18,000.00		\$ -		\$ -		\$ -		\$ -
GROUT BAGS (ITEM 555.25000001) [4"x4" TRIANGULAR WEDGE AROUND BASE]	CY	\$ 700.00	25	\$ 17,500.00		\$ -		\$ -		\$ -		\$ -
COFFERDAMS (ITEM 553.020001) [CARTHAGE]	EA	\$ 20,000.00	1	\$ 20,000.00		\$ -		\$ -		\$ -		\$ -
COFFERDAMS (ITEM 553.020001) [NEW BREMAN CRYSTAL POND]	EA	\$ 15,000.00		\$ -		\$ -	3	\$ 45,000.00		\$ -		\$ -
COFFERDAMS (ITEM 553.020001) [NEW BREMAN BLACK RIVER]	EA	\$ 20,000.00		\$ -		\$ -		\$ -	3	\$ 60,000.00		\$ -
MASONRY REPAIR (ITEM 560.49000008) [TUCK POINT AND PRESSURE GROUT]	SF	\$ 60.00		\$ -	180	\$ 10,800.00		\$ -		\$ -		\$ -
BANK PROTECTION (ITEM 620.05) [4"x4" TRIANGULAR WEDGE AROUND BASE]	CY	\$ 120.00		\$ -		\$ -		\$ -	20	\$ 2,400.00		\$ -
ESTIMATE SUB TOTAL				\$ 220,000.00		\$ 64,000.00		\$ 89,000.00		\$ 241,000.00		\$ 94,000.00
5% FCP				\$ 11,000.00		\$ 4,000.00		\$ 5,000.00		\$ 13,000.00		\$ 5,000.00
SUBTOTAL 1				\$ 231,000.00		\$ 68,000.00		\$ 94,000.00		\$ 254,000.00		\$ 99,000.00
15% CONTINGENCY				\$ 35,000.00		\$ 10,000.00		\$ 14,000.00		\$ 38,000.00		\$ 15,000.00
4% MOBILIZATION				\$ 9,000.00		\$ 3,000.00		\$ 4,000.00		\$ 10,000.00		\$ 4,000.00
SUBTOTAL 2				\$ 275,000.00		\$ 81,000.00		\$ 112,000.00		\$ 302,000.00		\$ 118,000.00
3% PRICE INFLATION				\$ 8,000.00		\$ 2,000.00		\$ 3,000.00		\$ 9,000.00		\$ 4,000.00
SUBTOTAL 3				\$ 285,000.00		\$ 85,000.00		\$ 115,000.00		\$ 315,000.00		\$ 125,000.00
SUBSTRUCTURE TOTAL				\$ 285,000.00		\$ 85,000.00		\$ 115,000.00		\$ 315,000.00		\$ 125,000.00
REHABILITATION TOTAL				\$ 1,520,000.00		\$ 210,000.00		\$ 280,000.00		\$ 945,000.00		\$ 435,000.00